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National Sewage Sludge Survey (NSSS). Data Element Dictionary for the Questionnaire and Analytical Data Bases

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16. Abstract (Limit: 200 words)

A data element dictionary including variable naming conventions, file formats, unique identifier variables and sampling weights and their use in estimation algorithms is provided for the 1988 National Sewage Sludge Use and Disposal Survey (NSSS). The survey, sponsored by the United States Environmental Protection Agency, is comprised of a Questionnaire and Analytical component. Data resulted from two stratified national probability samples of secondary treatment Publicly Owned Treatment Works (POTWs). General operating, financial, and use disposal practice data were collected in the Questionnaire component of the survey. Data are contained in the NSSS data base subtitled "1988 Sewage Sludge Use and Disposal Questionnaire Survey." Chemical concentrations from sludge samples collected just prior to disposal are reported in the Analytical component of the survey. Data from the Analytical component of the survey are contained in the data base subtitled "Analytical Assessment of Sewage Sludge at Final Disposal." This document provides general information pertaining to both data bases.

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NATIONAL SEWAGE SLUDGE SURVEY (NSSS)
DATA ELEMENT DICTIONARY
FOR THE QUESTIONNAIRE AND ANALYTICAL DATA BASES

Contained in this document are data element dictionaries for the questionnaire and analytical data bases from the 1988 National Sewage Sludge Use and Disposal Survey. The questionnaire and analytical components of the survey, conducted separately under the direction of the United States Environmental Protection Agency (USEPA), collected information concerning the use and disposal of sewage sludge from national samples of publicly owned treatment works (POTWs). The stratified, random sample for the analytical survey is related to the stratified random sample for the questionnaire survey in that all POTWs in the analytical sample are also included in the questionnaire sample. Facilities in both components of the survey performed secondary or higher treatment of wastewater.

The questionnaire data base records information concerning POTW operating practices, financial costs, and specific use and disposal practices. The data base is presented as a SAS library partitioned into 22 members. This SAS library, containing questionnaire responses from 462 POTWs, is available from two sources: (1) as file DGPA011.SLU29515.SSEP2689.SASFILE on a disk at the US EPA's National Computer Center (NCC); or (2) on a tape from the National Technical Information Service (NTIS).

For the analytical component of the survey, samples of sewage sludge were collected just prior to sludge disposal from 180 POTWs. These samples were chemically analyzed to quantify the concentrations of organic pollutants, metals, dioxins, and pesticides. The data base containing these results is presented in a SAS library partitioned into eight members. The SAS library is available from NCC as file DGPA011.NSSS.SASLIB or on tape from NTIS.

General guidance for the use of the questionnaire data base is provided in pages 2 through 134 in the section entitled, "DATA ELEMENT DICTIONARY: 1988 SEWAGE SLUDGE USE AND DISPOSAL QUESTIONNAIRE DATABASE." The table of contents for this section appears on page 3. Users information for the analytical data base is included in pages 135 through 186 in the section entitled, "NATIONAL SEWAGE SLUDGE SURVEY ANALYTICAL DATABASE." The table of contents specific to this is found on page 137.

NOTICE:

It should be noted that sampled POTWs were not selected with the same probability. Therefore, national estimates of characteristics from either the questionnaire or analytical data base must reflect survey weights. Survey weights specific to the questionnaire survey and their use are provided in pages 22 to 25. Analytical survey weights and use are provided in pages 184 to 186.

DATA ELEMENT DICTIONARY
1988 SEWAGE SLUDGE USE AND DISPOSAL
QUESTIONNAIRE DATABASE

Submitted to:

U.S. Environmental Protection Agency
Analysis and Evaluation Division
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March 30, 1990

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1. INTRODUCTION

Under the direction of EPA, SAIC conducted the 1988 National Sewage Sludge Use and Disposal Questionnaire Survey. The main objective of this survey was to collect data on sewage sludge generation and disposal practices to support the development of standards for the disposal of sewage sludge.

The database resulting from this national stratified random sample of secondary treatment POTWs is available on the EPA's mainframe computer at the National Computer Center (NCC) or from the National Technical Information Services (NTIS). The purpose of this document is to familiarize users with general details of the National Sewage Sludge Survey (NSSS) Questionnaire database.

The Data Element Dictionary begins with a description of the database file structure. This is followed by an explanation of the variable naming convention. Subsequent sections define key variables and their use, offer explanations for blank responses, and alert users to the occurrence of nonsampling error and the use of sampling weights.

A copy of the survey's questionnaire which has been provided by EPA is included in Appendix A of this document.

2. DATABASE DESCRIPTION

2.1 LOCATION

Data from the National Sewage Sludge Questionnaire Survey is contained in a SAS formatted IBM OS/VS2 library on a disk drive at the EPA National Computer Center (NCC). The SAS Library name is:

DGPA011.SLU29515.SSEP2689.SASFILE

2.2 FILE STRUCTURE

The SAS data library is partitioned among twenty two(22) members (files) as follows:

Member Name	Records Per Questionnaire	Brief Description
S0101	1	Demographic and financial data
S0102	1	Demographic and financial data
S0103	1	Demographic and financial data
S0104	1	Demographic and financial data
S0105	1	Demographic and financial data
S0106	1	Demographic and financial data
S0107	1	Demographic and financial data
S0108	1	Demographic and financial data
S0109	1	Demographic and financial data
S0110	1	Demographic and financial data
S0111	1	Demographic and financial data
S0201	1	Land application information
S0202	multiple	Land application--one record per land category;
S0301	1	Distribution and marketing data
S0401	1	Incineration information
S0402	multiple	Incinerator--one record per incinerator;
S0501	1	Monofill information
S0502	multiple	Monofill--one record per monofill;
S0601	1	Co-disposal landfill information
S0602	multiple	Co-disposal--one record per co-disposal landfill;
S0701	1	Ocean disposal information
S0702	1	Ocean disposal information

As the result of a stratified random sample of POTW's practicing at least secondary wastewater treatment procedures, 479 facilities were selected to be participants in the NSSS Questionnaire survey. A list of these facilities is contained in Appendix B. Responses received from 462 POTWs are contained in the database.

The number of observations in those files designated as having multiple records may exceed 462. That is because the survey participants were asked to complete multiple disposal practice specific sections, where it was applicable. For example, if a POTW used three monofill sites for disposal of its sewage sludge, there are three records for that facility in file S0502.

3. VARIABLE NAMES AND LABELS

3.1 VARIABLE NAMING CONVENTION

The variable naming convention was structured to allow variable responses to be traced back to their corresponding questions in the survey document. Every response in the questionnaire has been assigned a variable name. To illustrate this, consider a question that has three responses from which to select. Each of these response levels has been designated as a variable. To facilitate tracing back to the questionnaire, every variable name is composed of two or three components. These components are delineated as follows:

Component 1)	A letter designating the section of the questionnaire from which data was extracted. This letter can take on the value A through G corresponding to Sections I through VII in the survey.
Component 2)	The question number from the questionnaire. Question numbers are one or two digits in length and are preceded by the letter Q.
Component 3)	Defines the subresponse level for the question.

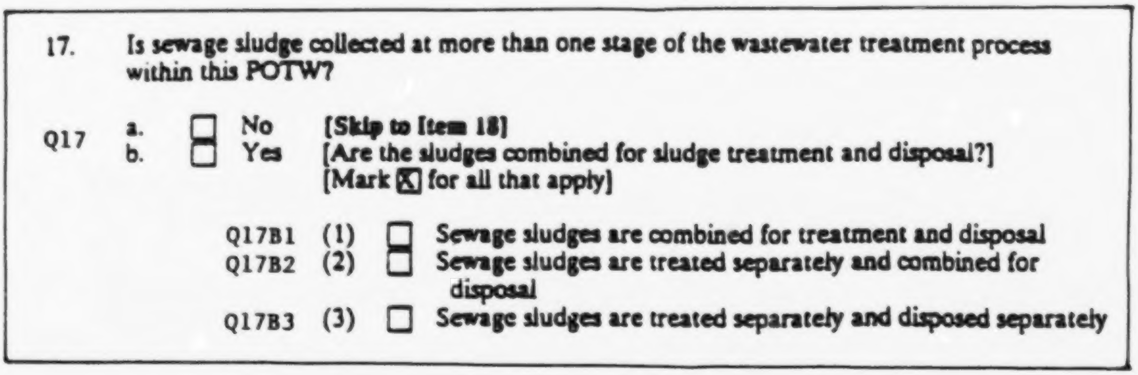
The variable name AQ17B3 records the response from:

1) Section I of the questionnaire;

2) Question 17;

3) Response "b" selection 3.

All of the variable names generated from Question 17 in Section I of the survey document are illustrated in the next example.



17. Is sewage sludge collected at more than one stage of the wastewater treatment process within this POTW?

Q17 a. ☐ No **[Skip to Item 18]**
b. ☐ Yes **[Are the sludges combined for sludge treatment and disposal?]**
[Mark ☒ for all that apply]

Q17B1 (1) ☐ **Sewage sludges are combined for treatment and disposal**
Q17B2 (2) ☐ **Sewage sludges are treated separately and combined for disposal**
Q17B3 (3) ☐ **Sewage sludges are treated separately and disposed separately**

3.2 EXCEPTIONS TO THE VARIABLE NAMING CONVENTION

There are three exceptions to the variable naming convention. They are: SURVEYID, EPISODE and ST. The variables SURVEYID and EPISODE are unique identifier variables designating the POTW's questionnaire number and analytical survey number, respectively. These two variables are discussed further in other sections. The variable ST appears in SAS library members S0102 to S0702. This variable designates the postal code for the state location of the POTW. This same information is found in variable AQ1F in member S0101.

3.3 SECTION LETTERS CORRESPONDING TO QUESTIONNAIRE SECTIONS

The first element of a variable name is a letter designating the section of the questionnaire from which the response was drawn. Although the sections in the questionnaire are numbered, SAS variable naming convention requires that variables begin with a character value. Therefore, the questionnaire section and its corresponding letter value are provided below.

QUESTIONNAIRE SECTION	DATABASE FILES	INFORMATION	VARIABLE LETTER
I	S0101-S0111	Demographic and financial	A
II	S0201-S0202	Land application	B
III	S0301	Distribution and marketing	C
IV	S0401-S0402	Incineration	D
V	S0501-S0502	Monofill	E
VI	S0601-S0602	Co-disposal Landfill	F
VII	S0701-S0702	Ocean dumping	G

3.4 VARIABLE LABELS

All variables are labelled. Although these labels are concise, effort was taken to reflect the nature of the information recorded in the variable. A listing of variable names and labels is provided in Appendix C. The user can eliminate variable labels from SAS procedures by issuing a NOLABEL option command.

4. IDENTIFICATION AND USE OF KEY VARIABLES

4.1 SURVEY IDENTIFICATION NUMBER

Survey identification number (SURVEYID) is the unique identifier variable for a POTW in the questionnaire database. SURVEYID is composed of seven digits that designate the POTW's flow group and disposal classification as well as identify the state in which the POTW is located. Translation of the information contained in SURVEYID is explained in more detail below.

- The first and second digits in SURVEYID indicate the POTW's flow rate and sludge use and disposal groups, respectively. These digits were assigned prior to mailing the questionnaires and are based on information from the 1986 NEEDS Survey.

  POTW flow rate group:

  1 = more than 100 MGD

  2 = 10 to less than 100 MGD

  3 = 1 to less than 10 MGD

  4 = less than 1 MGD

  POTW sewage sludge use and disposal practice group:

  1 = land application

  2 = distribution and marketing

  3 = incineration

  4 = monofill

  5 = co-disposal landfill

  6 = ocean disposal

- POTW location is determined from the third and fourth digits in SURVEYID. State codes are listed on the next page.

- The last three digits were assigned sequentially and were used for response tracking purposes.

STATE CODES FOR THE THIRD AND FOURTH DIGITS IN SURVEYID

01	Alaska	27	Montana
02	Alabama	28	North Carolina
03	Arkansas	29	North Dakota
04	Arizona	30	Nebraska
05	California	31	New Hampshire
06	Colorado	32	New Jersey
07	Connecticut	33	New Mexico
08	District of Columbia	34	Nevada
09	Delaware	35	New York
10	Florida	36	Ohio
11	Georgia	37	Oklahoma
12	Hawaii	38	Oregon
13	Iowa	39	Pennsylvania
14	Idaho	40	Rhode Island
15	Illinois	42	South Carolina
16	Indiana	43	South Dakota
17	Kansas	44	Tennessee
18	Kentucky	45	Texas
19	Louisiana	46	Utah
20	Massachusetts	47	Virginia
21	Maryland	48	Vermont
22	Maine	49	Washington
23	Michigan	50	Wisconsin
24	Minnesota	51	West Virginia
25	Missouri	52	Wyoming
26	Mississippi	41	Puerto Rico

The following example illustrates the translation of SURVEYID.

SURVEYID = 12 - 39 - 370

12 - POTW's daily flow rate exceeds 100 million gallons and sewage sludge disposal practice is distribution and marketing.

39 - POTW is located in Pennsylvania.

370- Sequential number used for tracking.

4.2 EPISODE

EPISODE is the unique identifier assigned to POTWs in the analytical survey. This variable was extracted from the analytical survey database to facilitate linking files from the two surveys.

- Facilities that were members of the questionnaire survey but not participants in the analytical survey will have missing, ie. ".", EPISODE numbers.
- Several facilities in the analytical survey have EPISODE = 0. This designates that the POTW produced no sludge.
- Episode numbers greater than 0 are unique for POTWs in the analytical survey.

5. LINKING FILES

5.1 LINKING FILES FROM THE QUESTIONNAIRE DATABASE

Two or more members (files) from the questionnaire SAS library may be linked by the following procedure:

1) Sort the files by SURVEYID.

2) Merge sorted files by SURVEYID.

5.2 LINKING FILES FROM THE QUESTIONNAIRE AND ANALYTICAL DATABASES

To link members (files) from the questionnaire database with files from the analytical database, use the following procedure:

1) Delete questionnaire data with EPISODE equal to zero or missing.

2) Sort files by EPISODE.

3) Merge the sorted files by EPISODE.

6. BLANK RESPONSES

Throughout the database, there are instances where no information is recorded for a POTW (SURVEYID) for certain variables. These instances, termed blank responses, are designated by "." if the variable records numeric values or are blank, ie. " ", if the variable contains character valued information. Blank responses are present in the database by design. There are three reasons for blank responses: no response was provided by the POTW; certain variables designating subresponses are not applicable to the POTW; or the questionnaire instructions directed the respondent to skip questions. This last instance is referred to as a "skip pattern."

Blank responses due to no response being provided by the POTW were minimized during the response clarification phase of the survey implementation scheme. Blank responses due to nonapplicable subresponse variables and skip patterns are illustrated below.

6.1 NONAPPLICABLE SUBRESPONSE VARIABLES

Due to the database format and variable naming convention described in this document, subresponses to questions were structured as variables. Therefore, if a subresponse selection is not applicable to the facility, a blank response appears for the corresponding variable.

EXAMPLE

25. Has your POTW implemented a wastewater pretreatment program that includes local limits?
[Mark ☒ in one box only]

AQ25 a. ☐ No **[Skip to Item 26]**
b. ☒ Yes **[Indicate what parameters are restricted or enforced by marking ☒ in the applicable boxes below]**

AQ25B1 (1) ☐ acidity
AQ25B2 (2) ☐ combustibility
AQ25B3 (3) ☒ federal categorical pretreatment standards
AQ25B4 (4) ☐ specific pollutants to prevent passthrough or interference (including sewage sludge contamination)
AQ25B5 (5) ☐ temperature of discharge
AQ25B6 (6) ☐ other (specify) AQ25B60

In this instance, variables AQ25B1, AQ25B2, and AQ25B4 through AQ25B60 would be blank responses.

The last question in the general information section of the survey, indicates the type of disposal practice used by the POTW as well as the remaining section of the questionnaire that are to be completed.

EXAMPLE

36. Indicate below the sewage sludge use and disposal practices used during 1988. Please provide further information on the individual practice(s) by completing the appropriate section(s).
[Mark ☒ for all that apply]

VARIABLE					FILE
AQ36A	a.	☒	Land application	**(Complete Section II, pages 17-24)**	S0201-S0202
AQ36B	b.	☐	Distribution and marketing	**(Complete Section III, pages 25-28)**	S0301
AQ36C	c.	☐	Incineration	**(Complete Section IV, pages 29-36)**	S0401-S0402
AQ36D	d.	☐	Monofill	**(Complete Section V, pages 37-42)**	S0501-S0502
AQ36E	e.	☐	Co-disposal landfill	**(Complete Section VI, pages 43-46)**	S0601-S0602
AQ36F	f.	☐	Ocean disposal	**(Complete Section VII, pages 47-50)**	S0701-S0702

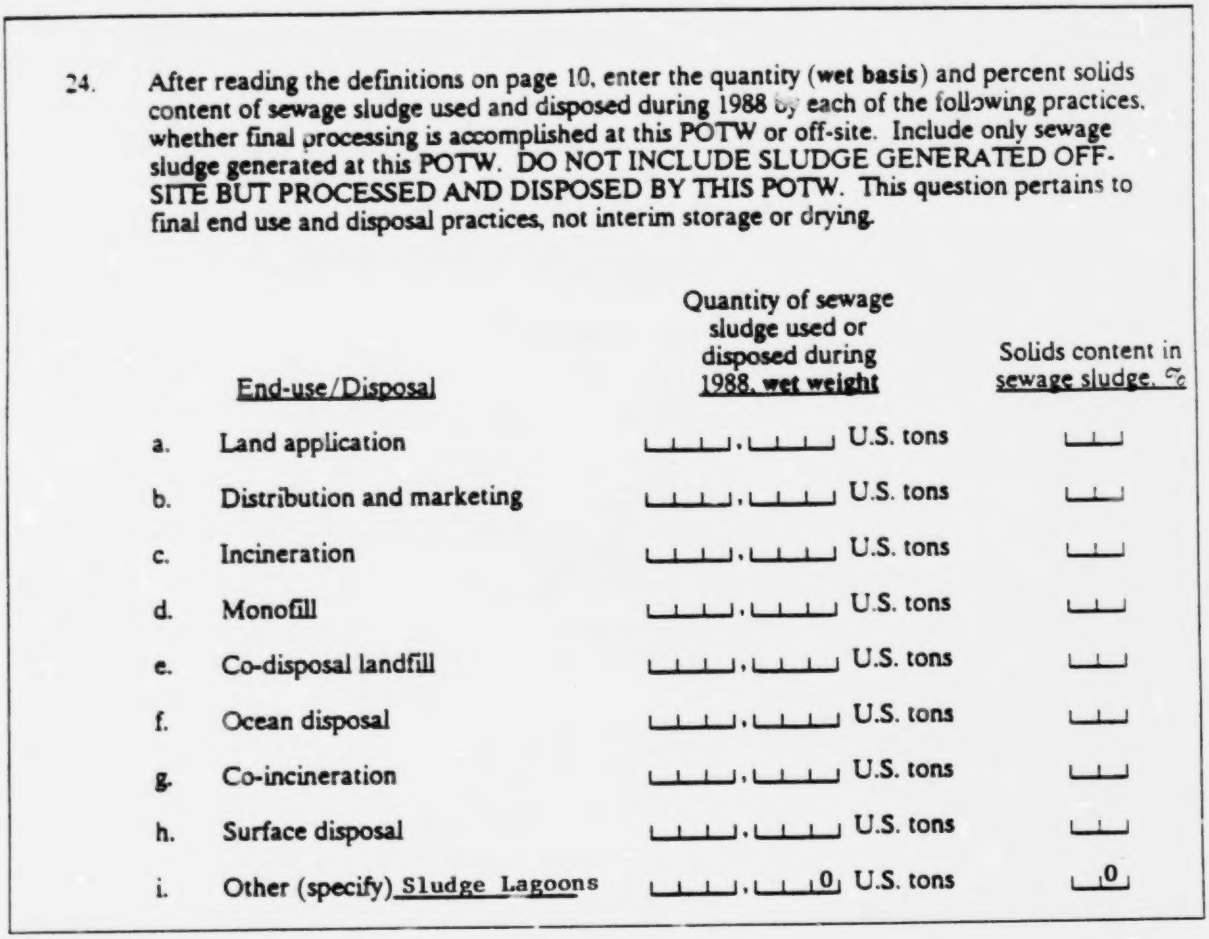
Fill out all of the Sections marked above before proceeding to the Certification portion below.

With the response "land application" illustrated in the example, blank responses would exist for variables AQ36B through AQ36F. Specific disposal practice information for this hypothetical POTW would appear in files S0201 and S0202. The POTW's SURVEYID would be recorded in files S0301 through S0702. However, all other variables in these remaining files would be blank.

In the event Question 36 was left completely blank, (i.e. the facility did not use any of the above described disposal practices), then the remaining disposal specific sections would be blank, and Question 24 would be used to identify the disposal practice.

The classification of disposal practices were expanded to include co-incineration, surface disposal, and other. Since Question 24 contains all nine of the possible disposal practices, it has been used to determine the disposal practices for those respondents who left Question 36 blank. In general facilities producing "no sludge" left Question 24 blank as well. An intensive study, including a second telephone response clarification, led to the assignment of the appropriate disposal practice for each of the problem facilities. In order to identify the disposal practice of those facilities producing "no sludge", a zero was coded in the appropriate response for Question 24.

EXAMPLE



24. After reading the definitions on page 10, enter the quantity (**wet basis**) and percent solids content of sewage sludge used and disposed during 1988 by each of the following practices, whether final processing is accomplished at this POTW or off-site. Include only sewage sludge generated at this POTW. DO NOT INCLUDE SLUDGE GENERATED OFF-SITE BUT PROCESSED AND DISPOSED BY THIS POTW. This question pertains to final end use and disposal practices, not interim storage or drying.

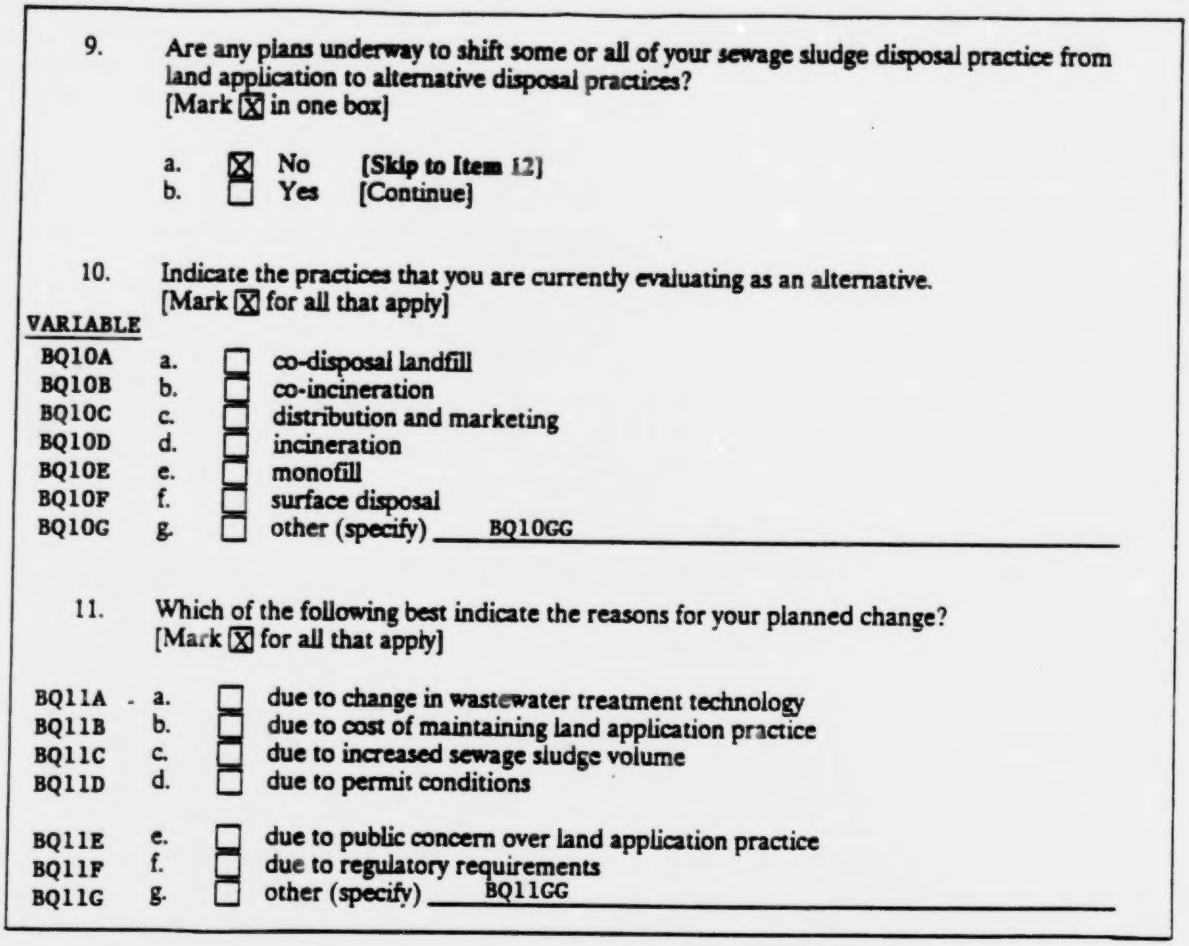
	End-use/Disposal	Quantity of sewage sludge used or disposed during 1988, wet weight		Solids content in sewage sludge, %
a.	Land application		U.S. tons	
b.	Distribution and marketing		U.S. tons	
c.	Incineration		U.S. tons	
d.	Monofill		U.S. tons	
e.	Co-disposal landfill		U.S. tons	
f.	Ocean disposal		U.S. tons	
g.	Co-incineration		U.S. tons	
h.	Surface disposal		U.S. tons	
i.	Other (specify) Sludge Lagoons	0	U.S. tons	0

The facility in this example produces "no sludge", but reported that they have a sludge lagoon. Therefore a zero has been coded for the 'wet weight of sewage sludge disposed of' under the disposal practice "other", and the specific type of disposal practice is 'sludge lagoon'. Having the zero response, rather than the blank, enables the computer to identify the disposal practice for this facility. Previously this identification process would have been a tedious task.

6.2 SKIP PATTERNS

There are several instances in the survey document where the respondent is instructed to skip certain questions. Blank responses exist for the variables corresponding to the skip pattern.

EXAMPLE



9. **Are any plans underway to shift some or all of your sewage sludge disposal practice from land application to alternative disposal practices?**
[Mark ☒ in one box]

a. ☒ No **[Skip to Item 12]**
b. ☐ Yes [Continue]

10. Indicate the practices that you are currently evaluating as an alternative.
[Mark ☒ for all that apply]

VARIABLE		
BQ10A	a.	☐ co-disposal landfill
BQ10B	b.	☐ co-incineration
BQ10C	c.	☐ distribution and marketing
BQ10D	d.	☐ incineration
BQ10E	e.	☐ monofill
BQ10F	f.	☐ surface disposal
BQ10G	g.	☐ other (specify) BQ10GG

11. Which of the following best indicate the reasons for your planned change?
[Mark ☒ for all that apply]

BQ11A	a.	☐ due to change in wastewater treatment technology
BQ11B	b.	☐ due to cost of maintaining land application practice
BQ11C	c.	☐ due to increased sewage sludge volume
BQ11D	d.	☐ due to permit conditions
BQ11E	e.	☐ due to public concern over land application practice
BQ11F	f.	☐ due to regulatory requirements
BQ11G	g.	☐ other (specify) BQ11GG

In this example, variables BQ10A through BQ11GG would be blank.

7. NONSAMPLING ERROR

The 1988 Sewage Sludge Use and Disposal Survey Database will be used to develop a number of population estimates regarding the generation, use and disposal of sewage sludge. These include estimates of the quantity of sewage sludge generated, the number of facilities that dispose sewage sludge using land application, and the quantity of sewage sludge disposed in co-disposal landfills. It is important to keep in mind that these are statistical survey estimates and are subject to error. Such error can be classified into two general categories: sampling error and nonsampling error.

Sampling error is the difference between an estimate obtained from a sample and the value resulting from a census of the entire population if the same questionnaire and survey procedures had been used. Sampling error is generally measured by confidence intervals and standard errors. Nonsampling error, on the other hand, refers to all other sources of errors that might occur in a survey. These include mistakes by the respondent in entering responses on the questionnaire, misinterpretation of specific questions, undetected data entry errors, transcription errors, nonresponse, and conversion of quantitative responses into standard units.

It is nonsampling error which will be discussed in this section. Generally, nonsampling errors cannot be measured from the data collected in a survey. However efforts were made to identify obvious sources of nonsampling error and steps were taken to reduce their impact. Detected sources of nonsampling error are described below.

7.1 RESPONDENT'S ABILITY TO CLEARLY UNDERSTAND THE QUESTION

The questionnaire included instructions on how to complete each question, key phrases that helped the respondent understand the intent of specific questions, and definitions to ensure that all respondents have a common understanding of the terms being used in the survey. Given these survey aids, respondents still misinterpreted or did not understand certain questions. The coding and data quality audit efforts identified certain questions which consistently showed inconsistent or ambiguous responses. The response clarification efforts by telephone revealed the reasons for respondent misinterpretation or misunderstanding of certain questions. The examples of questions and reasons for misinterpretation are as follows:

- Section I, Questions 6 and 10: A misunderstanding of how commercial and industrial users should be accounted. SAIC checked for some consistency between

Questions 6 and 10. Quite often the number of industrial establishments recorded in Question 6a did not match the number of industrial establishments entered in Question 10. The response clarification efforts identified that respondents omitted certain categories of industrial establishments if they did not fit the categories already listed in Question 10. Other respondents relied on water billing data to respond to Question 6a while Question 10 was answered with a different information source which did not detail all industrial establishments accounted for in Question 6. Some instances occurred where Question 6 included industrial and commercial establishment who did not discharge during 1988 while Question 10 excluded those establishments. All of the above reasons resulted in the value to Question 6 being inconsistent with the value to Question 10, and often times by an order of magnitude.

- Section I, Question 9: Misunderstanding on how to record flow rates in MGD. There were a few respondents who recorded flow rates as gallons per day (GD) instead of million gallons per day (MGD). A specific logic check was developed as part of the data quality audits to identify unusually high flow rates based on the population and industrial establishments served. Once the facilities were identified, telephone calls were placed to the facilities to verify whether the responses were recorded as GD or MGD.

7.2 RESPONDENT'S ABILITY TO REPORT QUANTITATIVE RESPONSES

Some respondents had difficulties in reporting quantitative responses for certain types of questions. The two most difficult questions for respondents to answer were Questions 16 and 24 in Section I. Question 16 asked respondents to provide the quantity of sewage sludge, in dry tons, generated during the 1988. Two types of problems occurred in providing quantitative responses to this question. First, a number of respondents that used sludge lagoons as a means for disposing sludge do not measure the annual quantity of sludge disposed. Second, a number of facilities do not dry the sludge before shipment off-site for disposal and consequently failed to answer Question 16.

The types of response problems identified for Question 16 also apply to Question 24. Respondents either did not measure the quantity of sludge being used and disposed during 1988 or could not quantify the quantity of sludge disposed in wet weight and therefore failed to answer the question.

Telephone response clarification efforts quite often focused on resolving blank or inconsistent responses for Questions 16 and 24. When necessary, respondents were encouraged to provide estimates versus leaving the blank responses for both questions.

However, Question 24 was used to identify disposal practices of the facilities which used one of the following practices: co-incineration, surface disposal, or other. Most of these facilities had little or "no sludge" and thus left Question 24 blank. An intensive study including a second telephone response clarification, led to the assignment of the appropriate disposal practice for each of the problem facilities. In order to facilitate identification of these disposal practices, a zero was coded into the appropriate response, replacing the blank, when needed. Therfore Question 24 will never be completely blank. At least one response will have either a valid numeric response from the facility, or a zero assigned to identify the disposal practice of those facilities which were producing "no sludge".

Some respondents also found difficulties in responding to Question 9 in Section I. Question 9 asked respondents for several types of facility flow rates. For a few facilities, flow rates were either left blank or they did not add up (i.e., the average domestic, industrial, infiltration, and "other" flows did not sum to the average daily total flow). Facilities that failed to provide a response for flow rates indicated that their meter for measuring flow was broken. For flow rates that did not sum to the total daily flow rate, facilities indicated that they did not know certain flow rates, such as the infiltration flow or the "other" flow, and consequently resulting in the sum of the component flow rates being less than the daily total flow.

The revenue and expense categories presented in Section I, Questions G33 and G34, was often inconsistent with the respondent's recordkeeping practices. For example, respondents could not break down user sewer charges by the three types of customers: residential, industrial, and commercial. During the response clarification efforts, respondents were asked to break down aggregate user sewer charges by the three types of users. However, a number of respondents were not able to do so. Consequently, the aggregated sewer charges was entered under one of the user categories.

7.3 CONVERSION OF THE RESPONSES FOR QUANTITIES OF SLUDGE FROM OTHER UNITS OF MEASUREMENT, SUCH AS CUBIC YARDS, CUBIC FEET, BARRELS, INTO THE STANDARD UNIT OF TONS

Some respondents reported the quantity of sludge generated (Question 16 in Section I) and the quantity of sludge used and disposed (Question 24 in Section I) in a unit of measurement other than U.S. tons. Efforts were taken to convert such responses into U.S. tons. In converting responses to tons, however, assumptions were made with regard to the density of waste and quantities of waste were rounded off, all of which may contribute to nonsampling errors.

8. SAMPLING WEIGHTS AND USE

National estimates produced from the National Sewage Sludge Survey data require the use of sampling weights since sampled POTWs were not selected from the sampling frame with the same probability. This section briefly describes the sampling plan for the questionnaire component of the survey, provides sampling weights, and illustrates the use of sampling weights in parameter estimation.

The 479 POTWs in the questionnaire component of the National Sewage Sludge Survey resulted from a stratified, random probability sample of the 11,407 POTWs in the 1986 NEEDS Survey sampling frame. Since flow rate and disposal practice are critical variables for the evaluation of technical sludge regulations, a criterion for designing the sampling plan was to allow separate analyses of each flow rate group and disposal practice. However, the distribution of POTWs across flow rate groups is highly skewed and the distribution across use and disposal practices is disproportionate. A simple random sample from the sampling frame would not have allowed for the separate analyses unless an extremely large number of POTWs was sampled. Therefore, a stratified, random sampling plan was executed. In this plan, a statistically determined number of POTWs was randomly drawn from each of 24 sampling frame strata created by crossing the four flow rate groups with the six use and disposal practices. The sampling weight for each stratum is presented in Section 8.1. Section 8.2 illustrates the use of these sampling weights to estimate stratum and population totals and means.

8.1 SAMPLING WEIGHTS

Let N_{ij} be the number of sample frame POTWs corresponding to the i^{th} flow rate group and the j^{th} disposal practice, for $i = 1,..,4$ and $j = 1,...,6$. The total number of POTWs in the i^{th} flow rate group is given by $N_{i.}$, where

$$N_{i.} = \sum_{j=1}^{6} N_{ij} \ .$$

The total number of POTWs in the j^{th} use and disposal group is $N_{.j}$; and the total for all strata is $N_{..}$. The N_{ij}s for the 24 sample frame strata are presented in Table 8.1.1.

Denote the sample size of the (ij^{th}) stratum by n_{ij}. Then the total sample size for the i^{th} flow rate stratum is designated as $n_{i.}$ and the sample total of the j^{th} use and disposal practice is designated as $n_{.j}$. Likewise, the total sample size for the survey is denoted as $n_{..}$. Table 8.1.2 presents the n_{ij}s for the 24 strata.

TABLE 8.1.1 SAMPLING FRAME FOR QUESTIONNAIRE SURVEY (N_{ij})

FLOW RATE GROUP (MGD)	USE OR DISPOSAL PRACTICE						
	LAND APPLI-CATION	DISTR. & MARKETING	INCINER-ATION	MONO-FILL	LAND-FILL & OTHER	OCEAN DUMPING	ROW TOTAL ($N_{i.}$)
1: > 100	2	8	7	0	7	4	28
2: 10 - 100	61	18	74	11	148	12	324
3: 1 - 10	524	41	61	17	1295	3	1941
4: 0 - 1	1646	27	2	17	7421	1	9114
TOTAL ($N_{.j}$)	2233	94	144	45	8871	20	11407 = $N_{..}$

TABLE 8.1.2 ACTUAL SAMPLE SIZES FOR QUESTIONNAIRE SURVEY (n_{ij})

FLOW RATE GROUP (MGD)	USE OR DISPOSAL PRACTICE						
	LAND APPLI-CATION	DISTR. & MARKETING	INCINER-ATION	MONO-FILL	LAND-FILL & OTHER	OCEAN DUMPING	ROW TOTAL ($n_{i.}$)
1: > 100	2	8	7	0	7	4	28
2: 10 - 100	13	10	33	9	31	11	107
3: 1 - 10	26	23	27	13	67	3	159
4: 0 - 1	75	15	1	13	80	1	185
TOTAL ($n_{.j}$)	116	56	68	35	185	19	479 = $n_{..}$

The sampling weight for each of the 24 strata is listed on Table 8.1.3. The sampling weight for the (ij^{th}) stratum is denoted as p_{ij} , where

$$p_{ij} = n_{ij}/N_{ij} .$$

The following section defines estimators for stratum and population totals and means derived from responses to questionnaire survey responses.

8.2 ESTIMATION OF STRATUM AND POPULATION TOTALS AND MEANS

For a specified questionnaire item or subitem, let X_{ijk} be the response for that item given by the k^{th} POTW from the i^{th} flow rate group and the j^{th} disposal practice. The variable X may be either discrete or continuous. The survey sample stratum flow rate group and disposal practice for a POTW are designated by the first and second digits,respectively, in the variable SURVEYID. The population total for variable X from the (ij^{th}) survey stratum is estimated by:

$$T_{ij} = \sum_{k=1}^{n_{ij}} X_{ijk}/ p_{ij} .$$

The estimated total for the variable X from the i^{th} survey flow rate group is obtained by summing T_{ij} across the six disposal practices:

$$T_{i.} = \sum_{j=1}^{6} T_{ij} .$$

Populations totals are estimated by summing the estimated strata totals. For example, the estimate of the population total for variable X is denoted by $T_{..}$ and given by:

$$T_{..} = \sum_{i=1}^{4} T_{i.} .$$

The mean value of the variable X for the i^{th} stratum is obtained by dividing the estimated stratum total ($T_{i.}$) by the number of POTWs in the i^{th} stratum of the sample frame ($N_{i.}$). That is, the mean for the i^{th} stratum is estimated as $T_{i.}/N_{i.}$. Likewise, the population mean for the variable X is estimated as $T_{..}/N_{..}$.

Estimates for the total of the variable X for the j^{th} disposal practice are obtained by summing the estimates of T_{ij} for the four flow group levels. Variances estimators and estimators of other quantities from stratified, random samples are found in Sampling Techniques, third edition, by William G. Cochran (Wiley & Sons, 1977).

TABLE 8.1.3 SAMPLING WEIGHTS FOR THE QUESTIONNAIRE SURVEY STRATA (p_{ij})

FLOW RATE GROUP (MGD)	USE OR DISPOSAL PRACTICE					
	LAND APPLI- CATION	DISTR. & MARKETING	INCINER- ATION	MONO- FILL	LAND- FILL & OTHER	OCEAN DUMPING
1: > 100	2/2	8/8	7/7	0	7/7	4/4
2: 10 - 100	13/61	10/18	33/74	9/11	31/148	11/12
3: 1 - 10	26/524	23/41	27/61	13/17	67/1295	3/3
4: 0 - 1	75/1646	15/27	1/2	13/17	80/7421	1/1

APPENDIX A

1988 SEWAGE SLUDGE USE AND DISPOSAL SURVEY QUESTIONNAIRE

OMB #: 2040-0119 Expires 9/30/90

United States
Environmental Protection Agency

1988 Sewage Sludge Use and Disposal Survey

QUESTIONNAIRE

Public reporting burden for this collection of information is estimated to average 16 hours per response for a small POTW and 32 hours for a large POTW. The reporting burden includes time for reviewing instructions, searching existing sources, gathering the data needed, and completing and reviewing the questionnaire. Send comments regarding the burden estimate or any other aspect of this collection of information, indicating suggestions for reducing this burden to:

Chief, Information Policy Branch, PM223
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

and

Office of Information and Regulatory Affairs
Office of Management and Budget
Washington, D.C. 20503

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PLEASE READ ALL INSTRUCTIONS
BEFORE COMPLETING THE QUESTIONNAIRE

GENERAL INSTRUCTIONS

INTRODUCTION

The Environmental Protection Agency (EPA) is developing a technical regulation for the use and disposition of sewage sludges either generated or treated in a treatment works. This questionnaire is limited to publicly owned treatment works (POTWs). A treatment works is any device or system used in the treatment (including recycling and reclamation) of domestic sewage of a liquid nature. This questionnaire covers six use and disposal practices for sewage sludge:

(1) Land application;
(2) Distribution and marketing;
(3) Incineration;
(4) Monofill;
(5) Co-disposal landfill; and
(6) Ocean disposal.

Information collected through this questionnaire is needed to evaluate the risks, costs, and economic impacts of the regulation of these sewage sludge use and disposal practices.

WHO MUST COMPLETE THIS QUESTIONNAIRE?

As described in the cover letter, under Section 308 of the Clean Water Act, every POTW receiving this questionnaire must complete it.

AUTHORITY

Section 405(d) of the Clean Water Act of 1977, as amended by the Water Quality Act of 1987 directs EPA to issue a technical regulation for the use and disposal of sewage sludge. Section 308 of the Clean Water Act authorizes EPA to require POTW operators to provide information needed in carrying out Section 405.

WHEN AND WHERE TO FILE

Return the completed questionnaire in the enclosed envelope within 45 days of date of receipt to the address below:

Mr. Robert Esworthy
Office of Water Regulations and Standards
U.S. Environmental Protection Agency (WH-586)
401 M Street, S.W.
Washington, DC 20460

Please check that all required Sections are completed and that you have **signed the Certification Statement** on page 16 before mailing the questionnaire to the above address.

REPORTING PERIOD

Report information for the **calendar year 1988** unless specifically instructed to do otherwise. If you prefer to report on a fiscal year (ending 1988) basis, please indicate by marking X in the box and filling in the blanks below.

☐ Fiscal year ending ________ (month) ______ (day), 1988

FILLING IN THE FORM

All respondents should complete Section I of this questionnaire. Section I pertains to general POTW information. Sections II through VII apply to the six individual sewage sludge use and disposal practices, and should be completed as applicable. Sections II, IV, V, and VI consist of two parts, Part A and Part B. Be aware that it may be necessary to complete separate (multiple) copies of Part B within a Section. Specific instructions are provided throughout the questionnaire. If you require additional space to complete your answer on any item, please attach a separate sheet specifying the Section and Item number with the appended information.

Please fill in the form with dark ink. Proofread all entries carefully before completing the Certification Statement on page 16.

DON'T KNOW/NOT APPLICABLE

The POTW operator is responsible for providing all of the responses, including those situations where sludge treatment and/or disposal is provided by a third party, under contract. If precise information is either not known or not available, please provide your **best estimate**, circle the estimated item and write "Est" next to the circle. If the information is completely unobtainable for a particular item, enter "DK" indicating that you don't know. Enter "N/A" if the information requested is not applicable. Please make your best effort to complete every item.

FURTHER INFORMATION

If you require assistance in completing the questionnaire, call Robert Esworthy at (202) 382-5398, weekdays, between 9 a.m. and 5 p.m. EST.

QUESTIONNAIRE

SECTION I. GENERAL POTW INFORMATION

A POTW IDENTIFICATION INFORMATION

mailing
label —>

1.	Name of the publicly owned treatment works (POTW) and physical location (which may differ from the above mailing address). Complete items a through g. Mark ☒ for items a, b, c, d, f, and g if same as label; if different, enter corrections. If label is absent, enter information.

a. POTW name Same as label ☐ or —>		b. NPDES Permit No. Same as label ☐ or —> __________	
c. Address number and street name of the POTW Same as label ☐ or —>			
d. City, town, village, etc. Same as label ☐ or —>	e. County	f. State Same as label ☐ or —> __	g. Zip code Same as label ☐ or —> _____ - ____

2.	Mailing address of the POTW. Mark ☒ for a, b, c, and d if same as label; if different, enter corrections.

a. Number and street name of mailing address Same as label ☐ or —>		
b. City, town, village, etc. Same as label ☐ or —>	c. State Same as label ☐ or —> __	d. Zip code Same as label ☐ or —> _____ - ____

3.	Name, title, and telephone number of the person(s) who should be contacted regarding information on this questionnaire.

a. Please print; Last name First name M.I. b. Title:	c. Telephone (___) ___ - ____ Ext. ____ Best time to call __ : __ AM __ : __ PM
d. Alternate contact; Last name First name M.I. e. Title:	f. Telephone (___) ___ - ____ Ext. ____ Best time to call __ : __ AM __ : __ PM

B SERVICE AREA INFORMATION

4. What is the estimated residential population served by this POTW?

__,___,___ population served

5. Estimate the number of households served by this POTW. (When estimating total number of households, note that individual dwelling units in a multi-unit dwelling (such as an apartment complex) should be counted as separate households even though they may all share only one water and sewer meter)

__,___,___ households served

6. How many identified industrial and other non-domestic establishments are discharging wastewater to this POTW?

a. ___,___ industrial establishments
b. ___,___ other non-domestic (e.g., commercial, institutional) establishments
c. ___,___ total industrial and other non-domestic establishments

C POTW OPERATING INFORMATION

7. Is this POTW a combined sanitary wastewater and storm water treatment facility?

a. ☐ No [Skip to Item 9]
b. ☐ Yes [Continue]

8. What is the storm water treatment capacity, in millions of gallons per day (MGD)?

____.___ MGD

9. Provide the following wastewater flow information (excluding storm water management), in millions of gallons per day (MGD):

a. __,___.___ MGD annual average **daily design flow** - the flow rate for which the POTW was designed.

b. __,___.___ MGD annual average **daily total flow** for 1988 - the total volume of wastewater treated by the POTW in 1988 divided by 366.

(1) __,___.___ MGD annual average **daily domestic flow**

(2) __,___.___ MGD annual average **daily industrial and other non-domestic flow**

(3) __,___.___ MGD annual average **daily infiltration flow**

(4) __,___.___ MGD annual average **daily other flow**, specify ____________________

10. Did your POTW receive wastewater discharges from industrial users in 1988?

a. ☐ No **[Skip to Item 11]**
b. ☐ Yes [Mark ☒ for all boxes that apply and estimate the number of establishments and the average daily flow of wastewater, in MGD, for the following industrial categories]

		Industrial Category	Number of Establishments	Average Daily Flow in MGD
(1)	☐	Adhesives and sealants manufacturing	☐☐☐	☐,☐☐☐.☐☐☐
(2)	☐	Aluminum forming	☐☐☐	☐,☐☐☐.☐☐☐
(3)	☐	Battery manufacturing	☐☐☐	☐,☐☐☐.☐☐☐
(4)	☐	Can making	☐☐☐	☐,☐☐☐.☐☐☐
(5)	☐	Chemicals, inorganic	☐☐☐	☐,☐☐☐.☐☐☐
(6)	☐	Chemicals, organic; plastics and synthetic fibers	☐☐☐	☐,☐☐☐.☐☐☐
(7)	☐	Coil coating	☐☐☐	☐,☐☐☐.☐☐☐
(8)	☐	Copper forming	☐☐☐	☐,☐☐☐.☐☐☐
(9)	☐	Electroplating	☐☐☐	☐,☐☐☐.☐☐☐
(10)	☐	Electrical and electronic components	☐☐☐	☐,☐☐☐.☐☐☐
(11)	☐	Explosives manufacturing	☐☐☐	☐,☐☐☐.☐☐☐
(12)	☐	Food and food products processing	☐☐☐	☐,☐☐☐.☐☐☐
(13)	☐	Hazardous waste site cleanup	☐☐☐	☐,☐☐☐.☐☐☐
(14)	☐	Iron and steel	☐☐☐	☐,☐☐☐.☐☐☐
(15)	☐	Laboratories and hospitals	☐☐☐	☐,☐☐☐.☐☐☐
(16)	☐	Laundries, industrial and commercial	☐☐☐	☐,☐☐☐.☐☐☐
(17)	☐	Leather tanning and finishing	☐☐☐	☐,☐☐☐.☐☐☐
(18)	☐	Metal finishing	☐☐☐	☐,☐☐☐.☐☐☐
(19)	☐	Metal molding and casting (foundries)	☐☐☐	☐,☐☐☐.☐☐☐
(20)	☐	Metals forming, non-ferrous	☐☐☐	☐,☐☐☐.☐☐☐
(21)	☐	Metals manufacturing (smelting and refining), non-ferrous	☐☐☐	☐,☐☐☐.☐☐☐
(22)	☐	Motor vehicle services (cleaning)	☐☐☐	☐,☐☐☐.☐☐☐
(23)	☐	Paint manufacturing and formulation	☐☐☐	☐,☐☐☐.☐☐☐

[Industrial categories continued on following page]

10. (Continued)

		Industrial Category	Number of Establishments	Average Daily Flow in MGD
(24)	☐	Pesticide manufacturing, formulation, and packaging		
(25)	☐	Petroleum refining		
(26)	☐	Pharmaceutical manufacturing, formulation, and packaging		
(27)	☐	Plastics molding and forming		
(28)	☐	Porcelain enameling		
(29)	☐	Pulp and paper mills		
(30)	☐	Soap, detergents, cleaning preparation, and wax manufacturing and formulation		
(31)	☐	Steam electric power generating		
(32)	☐	Textile mills		
(33)	☐	Timber products processing		
(34)	☐	Other (specify) ____________		
(35)	☐	Other (specify) ____________		
(36)	☐	Other (specify) ____________		

11. Which of the following wastewater treatment processes are a part of the POTW? (Sludge treatment processes are addressed in Question 12)
[Mark ☒ for all that apply]

a. ☐ activated sludge
b. ☐ bar screen and grit removal
c. ☐ biological denitrification
d. ☐ biological nitrification
e. ☐ chemical addition

f. ☐ disinfection (specify type) ______________________________
g. ☐ flotation thickening
h. ☐ multi-media filtration (e.g., sand)
i. ☐ oxidation ponds
j. ☐ primary clarification

k. ☐ rotating biological contactor
l. ☐ secondary clarification
m. ☐ trickling filter
n. ☐ other wastewater treatment processes (specify) ____________________

12. Identify the sewage sludge treatment processes at the POTW.
[Mark ☒ for all that apply]

a. ☐ aerobic digestion
b. ☐ anaerobic digestion
c. ☐ centrifuges
d. ☐ chlorine oxidation
e. ☐ composting

f. ☐ drying beds
g. ☐ filter presses
h. ☐ flotation thickening
i. ☐ gravity thickening
j. ☐ heat treatment

k. ☐ lime stabilization
l. ☐ polymer addition
m. ☐ vacuum filtration
n. ☐ wet air oxidation
o. ☐ other sewage sludge treatment processes (specify) ____________________
p. ☐ sewage sludge is processed off-site

13. For the treatment processes (excluding composting) identified in Item 12, indicate where the treatment takes place.
[Mark ☒ for all that apply]

a. ☐ above-ground tanks or other containers
b. ☐ aeration lagoons
c. ☐ containment ponds
d. ☐ drying or gravity thickening lagoons
e. ☐ stabilization ponds
f. ☐ other (specify) ____________________

14. Indicate the chemicals or materials used to treat the wastewater or sewage sludge.
[Mark ☒ for all that apply]

Chemical or Material

a. ☐ alum
b. ☐ ferric chloride
c. ☐ filter aids

  (1) ☐ silicone dioxides
  (2) ☐ celite
  (3) ☐ other filter aids (specify) ____________________

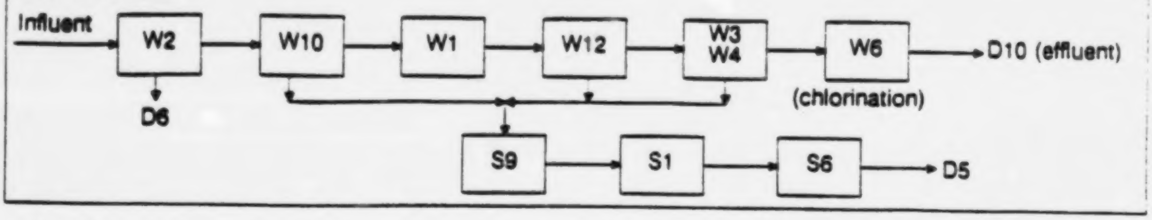
d. ☐ lime
e. ☐ organic polymer
f. ☐ pickle liquor
g. ☐ other (specify) ____________________
h. ☐ none

15. In the space below, or on an attached sheet, provide a schematic diagram of the wastewater treatment processes at your POTW, the sewage sludge treatment and handling processes, and the sewage sludge use and disposal practices. If sewage sludge is processed off-site, indicate the method of sludge transfer and provide a schematic diagram for processing the sludge off-site. Use the process code key on page 7 to label each process (e.g., secondary clarification processes may be represented as $\boxed{\text{W12}}$ as shown in the example on the right).

SCHEMATIC

☐ Check here if the schematic diagram is on an attached sheet.

EXAMPLE:



DIAGRAM

Process code key:

Wastewater Treatment

W1.	activated sludge
W2.	bar screen & grit removal
W3.	biological denitrification
W4.	biological nitrification
W5.	chemical addition (specify)
W6.	disinfection (specify)
W7.	flotation thickening
W8.	multi-media filtration (e.g., sand)
W9.	oxidation pond
W10.	primary clarification
W11.	rotating biological contactor
W12.	secondary clarification
W13.	trickling filter
W14.	other (specify)

Sludge Treatment

S1.	aerobic digestion
S2.	anaerobic digestion
S3.	centrifuges
S4.	chlorine oxidation
S5.	composting
S6.	drying beds
S7.	filter presses
S8.	flotation thickening
S9.	gravity thickening
S10.	heat treatment
S11.	lime stabilization
S12.	polymer addition
S13.	vacuum filtration
S14.	wet air oxidation
S15.	other (specify)
S16.	processed off-site

Use or Disposal Practice (See definitions on page 10)

D1.	land application
D2.	distribution and marketing
D3.	incineration with energy recovery
D4.	incineration without energy recovery
D5.	monofill
D6.	co-disposal landfill
D7.	ocean disposal
D8.	co-incineration
D9.	surface disposal
D10.	NPDES discharge (effluent)
D11.	other (specify)

D SEWAGE SLUDGE GENERATION, USE, AND DISPOSAL

16. Enter the total quantity of sewage sludge generated during 1988, in U.S. tons, dry weight basis (2,000 pounds per U.S. ton). Include only sewage sludge generated at this POTW. DO NOT INCLUDE SLUDGE GENERATED OFF-SITE BUT PROCESSED AT THIS POTW.

└┴┴┘,└┴┴┘ U.S. tons (**dry weight**) generated in 1988

17. Is sewage sludge collected at more than one stage of the wastewater treatment process within this POTW?

a. ☐ No **[Skip to Item 18]**
b. ☐ Yes [Are the sludges combined for sludge treatment and disposal?] [Mark ☒ for all that apply]
    (1) ☐ Sewage sludges are combined for treatment and disposal
    (2) ☐ Sewage sludges are treated separately and combined for disposal
    (3) ☐ Sewage sludges are treated separately and disposed separately

18. Does your POTW transfer sewage sludge to a regional or centralized sludge handling POTW for processing and/or disposal?

a. ☐ No **[Skip to Item 20]**
b. ☐ Yes [Continue]

19. For the POTW receiving your sewage sludge, provide the name, city, state, and quantity of sludge transferred during 1988.

a. POTW name ______________________________
b. City ______________
c. State ______________
d. Annual U.S. tons transferred during 1988, **dry weight** └┴┴┘,└┴┴┘

20. Is your POTW a regional or centralized sewage sludge handling facility, processing and/or disposing of sludge generated by other POTWs?

a. ☐ No **[Skip to Item 22]**
b. ☐ Yes [Continue]

D SEWAGE SLUDGE GENERATION, USE, AND DISPOSAL

16. Enter the total quantity of sewage sludge generated during 1988, in U.S. tons, dry weight basis (2,000 pounds per U.S. ton). Include only sewage sludge generated at this POTW. DO NOT INCLUDE SLUDGE GENERATED OFF-SITE BUT PROCESSED AT THIS POTW.

⎿⏊⏊⏌,⎿⏊⏊⏌ U.S. tons (**dry weight**) generated in 1988

17. Is sewage sludge collected at more than one stage of the wastewater treatment process within this POTW?

a. ☐ No **[Skip to Item 18]**
b. ☐ Yes [Are the sludges combined for sludge treatment and disposal?] [Mark ☒ for all that apply]

(1) ☐ Sewage sludges are combined for treatment and disposal
(2) ☐ Sewage sludges are treated separately and combined for disposal
(3) ☐ Sewage sludges are treated separately and disposed separately

18. Does your POTW transfer sewage sludge to a regional or centralized sludge handling POTW for processing and/or disposal?

a. ☐ No **[Skip to Item 20]**
b. ☐ Yes [Continue]

19. For the POTW receiving your sewage sludge, provide the name, city, state, and quantity of sludge transferred during 1988.

a. POTW name ______________________
b. City ____________
c. State ____________
d. Annual U.S. tons transferred during 1988, **dry weight** ⎿⏊⏊⏌,⎿⏊⏊⏌

20. Is your POTW a regional or centralized sewage sludge handling facility, processing and/or disposing of sludge generated by other POTWs?

a. ☐ No **[Skip to Item 22]**
b. ☐ Yes [Continue]

21. For each contributing POTW, list the name, city, state, and quantity of sewage sludge received from that POTW during 1988.

	POTW name	City	State	Annual U.S. tons received during 1988, dry weight
a.				,
b.				,
c.				,
d.				,
e.				,
f.				,
g.				,
h.				,
i.				,
j.				,

22. Is sewage sludge stored temporarily or indefinitely at your POTW?

a. ☐ No [Skip to Item 24]
b. ☐ Yes [Indicate the type of storage by marking ☒ for all that apply]

(1) ☐ sludge pile
(2) ☐ sludge storage impoundment
(3) ☐ above-ground tank or other container
(4) ☐ other (specify) ______________________

23. How long is sewage sludge stored?
[Mark ☒ in one box only]

a. ☐ less than 1 year
b. ☐ 1 to 2 years
c. ☐ 2 to 5 years
d. ☐ 5 to 10 years
e. ☐ 10 or more years
f. ☐ no plans to remove sludge

Please read carefully the definitions of sewage sludge use and disposal practices found on page 10 before completing item 24

DEFINITIONS OF SEWAGE SLUDGE USE AND DISPOSAL PRACTICES:

Land application - The application of liquid, dewatered, dried, or composted sewage sludge to the land by surface spraying, surface spreading, or subsurface injection. Sludge may be applied to land intended for a number of end uses including, but not limited to, cropland, pasture, commercially grown turf, silviculture, land for reclamation, and dedicated sites. The sludge may be applied by the POTW or by a distributor or end user under a contract or similar control mechanism with the POTW. Note that in this definition the **POTW has direct control over the application of sewage sludge**.

Distribution and marketing - The give-away, transfer, or sale of sewage sludge or sewage sludge product (e.g., composted sludge product) in either bagged or bulk form. The POTW does not apply the sludge and the end-user applying the sludge is **not under the direct control of the POTW**. Note that a label or notice provided with the sewage sludge does not constitute direct control.

Sewage sludge incineration - The treatment of sewage sludge exclusively in an enclosed device using controlled flame combustion. Includes all sewage sludge incinerators on site and also, those facilities transporting sewage sludge to another facility that operates sewage sludge incinerators.

Monofill - A controlled area of land that contains one or more sewage sludge units. A sewage sludge unit is defined as a controlled area of land where only sewage sludge is placed. The sludge is covered with a cover material at the end of each operating day or at more frequent intervals.

Co-disposal landfill - An area of land or an excavation that is used for the permanent disposal of solid waste, residuals, and sewage sludges. These include, but are not limited to, municipal landfills that accept sewage sludge for disposal in conjunction with other waste materials.

Ocean disposal - Dumping or controlled release of sewage sludge from a barge or other vessel into marine water.

Co-incineration - The combined treatment of sewage sludge and other combustible waste materials (e.g., trash and other municipal solid waste) in an enclosed device using controlled flame combustion.

Surface disposal - A controlled area of land where only sewage sludge is placed for a period of one year or longer. Sludge placed in this area is **not** provided with a daily or final cover. (Surface disposal areas may become naturally covered with vegetation as a result of seed drift.) Surface disposal does not include areas where sludge has formed or is currently being formed and being deposited as a result of ongoing treatment (e.g., finishing ponds). Surface disposal can be a natural topographical depression, man-made excavation or diked area formed primarily of earthen material designed to store (not treat) sewage sludge for a period of one year or longer. Surface disposal also includes placement of sludge in piles for a period of one year or more, as a means of disposal.

24. After reading the definitions on page 10, enter the quantity (**wet basis**) and percent solids content of sewage sludge used and disposed during 1988 by each of the following practices, whether final processing is accomplished at this POTW or off-site. Include only sewage sludge generated at this POTW. DO NOT INCLUDE SLUDGE GENERATED OFF-SITE BUT PROCESSED AND DISPOSED BY THIS POTW. This question pertains to final end use and disposal practices, not interim storage or drying.

	End-use/Disposal	Quantity of sewage sludge used or disposed during 1988, wet weight	Solids content in sewage sludge, %
a.	Land application	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
b.	Distribution and marketing	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
c.	Incineration	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
d.	Monofill	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
e.	Co-disposal landfill	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
f.	Ocean disposal	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
g.	Co-incineration	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
h.	Surface disposal	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵
i.	Other (specify)____________	⎵⎵⎵⎵,⎵⎵⎵⎵ U.S. tons	⎵⎵

E WASTEWATER PRETREATMENT

25. Has your POTW implemented a wastewater pretreatment program that includes local limits?
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 26]**
b. ☐ Yes [Indicate what parameters are restricted or enforced by marking ☒ in the applicable boxes below]

(1) ☐ acidity
(2) ☐ combustibility
(3) ☐ federal categorical pretreatment standards
(4) ☐ specific pollutants to prevent passthrough or interference (including sewage sludge contamination)
(5) ☐ temperature of discharge
(6) ☐ other (specify) ______________________

26. Have you completed an industrial waste survey, i.e., survey or inventory of all industrial dischargers in your service area, their flow rate, and characteristics of their wastewater?
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes

27. Are reductions in the concentration of pollutants in your sewage sludge **technically** achievable through additional pretreatment requirements imposed on industrial users?
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes
c. ☐ Comments______________________________________
____

28. Are reductions in sewage sludge pollutant concentrations from additional pretreatment **practically** achievable considering the cost involved and other non-technical considerations?
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes
c. ☐ Comments______________________________________
____

F WASTEWATER AND SEWAGE SLUDGE TESTING

29. How frequently did you test for BOD and TSS in influent and effluent during 1988?

	Frequency of testing					
Influent	Daily	Weekly	Monthly	Quarterly	Annually	Other (specify)
a. BOD	☐	☐	☐	☐	☐	☐ ______
b. TSS	☐	☐	☐	☐	☐	☐ ______
Effluent						
c. BOD	☐	☐	☐	☐	☐	☐ ______
d. TSS	☐	☐	☐	☐	☐	☐ ______

30. Indicate the annual average BOD and TSS levels in the influent and effluent during 1988.

Influent		Effluent	
a. BOD	⎵⎵⎵⎵ mg/liter	c. BOD	⎵⎵⎵⎵ mg/liter
b. TSS	⎵⎵⎵⎵ mg/liter	d. TSS	⎵⎵⎵⎵ mg/liter

31. Did you analyze your sewage sludge for **metal pollutants** during 1988?
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 32]**
b. ☐ Yes [Indicate frequency by marking ☒ in one box only for each pollutant]

	Frequency of testing					
Pollutant	Daily	Weekly	Monthly	Quarterly	Annually	Other (specify)
(1) Arsenic	☐	☐	☐	☐	☐	☐ ______
(2) Beryllium	☐	☐	☐	☐	☐	☐ ______
(3) Cadmium	☐	☐	☐	☐	☐	☐ ______
(4) Chromium	☐	☐	☐	☐	☐	☐ ______
(5) Copper	☐	☐	☐	☐	☐	☐ ______
(6) Iron	☐	☐	☐	☐	☐	☐ ______
(7) Lead	☐	☐	☐	☐	☐	☐ ______
(8) Mercury	☐	☐	☐	☐	☐	☐ ______
(9) Molybdenum	☐	☐	☐	☐	☐	☐ ______
(10) Nickel	☐	☐	☐	☐	☐	☐ ______
(11) Selenium	☐	☐	☐	☐	☐	☐ ______
(12) Zinc	☐	☐	☐	☐	☐	☐ ______
(13) Other (specify) ______	☐	☐	☐	☐	☐	☐ ______

32. Did you analyze your sewage sludge for any of the following pollutants during 1988?
[Mark ☒ in one box only]

a. ☐ No [Skip to Item 33]
b. ☐ Yes [Indicate frequency by marking ☒ in one box only for each pollutant]

		Frequency of testing					
	Pollutant	Daily	Weekly	Monthly	Quarterly	Annually	Other (specify)
(1)	Aldrin/Dieldrin	☐	☐	☐	☐	☐	☐ ______
(2)	Benzene	☐	☐	☐	☐	☐	☐ ______
(3)	Benzo(a)anthracene	☐	☐	☐	☐	☐	☐ ______
(4)	Benzo(a)pyrene	☐	☐	☐	☐	☐	☐ ______
(5)	Bis (2-ethyl hexyl) phthalate	☐	☐	☐	☐	☐	☐ ______
(6)	Carbon tetrachloride	☐	☐	☐	☐	☐	☐ ______
(7)	Chlordane	☐	☐	☐	☐	☐	☐ ______
(8)	Cyanide	☐	☐	☐	☐	☐	☐ ______
(9)	DDT/DDD/DDE	☐	☐	☐	☐	☐	☐ ______
(10)	3, 3, Dichlorobenzene	☐	☐	☐	☐	☐	☐ ______
(11)	2, 4 - Dichlorophenoxy acetic acid	☐	☐	☐	☐	☐	☐ ______
(12)	Dimethyl nitrosamine	☐	☐	☐	☐	☐	☐ ______
(13)	Endrin	☐	☐	☐	☐	☐	☐ ______
(14)	Fluoride	☐	☐	☐	☐	☐	☐ ______
(15)	Heptachlor	☐	☐	☐	☐	☐	☐ ______
(16)	Hexachlorobenzene	☐	☐	☐	☐	☐	☐ ______
(17)	Hexachlorobutadiene	☐	☐	☐	☐	☐	☐ ______
(18)	Lindane	☐	☐	☐	☐	☐	☐ ______
(19)	Malathion	☐	☐	☐	☐	☐	☐ ______
(20)	Methylene chloride	☐	☐	☐	☐	☐	☐ ______
(21)	Pentachlorophenol	☐	☐	☐	☐	☐	☐ ______
(22)	Phenol	☐	☐	☐	☐	☐	☐ ______
(23)	Polychlorinated biphenyls (PCB)	☐	☐	☐	☐	☐	☐ ______
(24)	Tetrachloroethylene	☐	☐	☐	☐	☐	☐ ______
(25)	Toxaphene	☐	☐	☐	☐	☐	☐ ______
(26)	Trichloroethylene	☐	☐	☐	☐	☐	☐ ______
(27)	Vinyl chloride	☐	☐	☐	☐	☐	☐ ______
(28)	Other (specify) ______	☐	☐	☐	☐	☐	☐ ______

G POTW FINANCIAL INFORMATION

33. Estimate the amount of 1988 POTW revenues derived from each of the following sources: (Please separate sewer charges from water charges)

	Source of revenue	Amount
a.	User sewer charges: residential (domestic)	$ ___,___,___
b.	User sewer charges: industrial	$ ___,___,___
c.	User sewer charges: other (commercial, institutional)	$ ___,___,___
d.	Sewage sludge sales	$ ___,___,___
e.	Taxes: municipal and other	$ ___,___,___
f.	Other (specify) ____________________	$ ___,___,___
g.	Total 1988 revenues from sewer service	$ ___,___,___

34. Estimate the amount of 1988 POTW expenses for each of the following items: (Capital costs should not be included)

	Item	Amount
a.	Fixed expenses (e.g., sewer debt service)	$ ___,___,___
b.	Operating and maintenance expenses (e.g., labor, energy, chemicals, insurance) for:	
(1)	Wastewater treatment	$ ___,___,___
(2)	On-site sewage sludge management and disposal	$ ___,___,___
(3)	Management and disposal of sewage sludge off-site	$ ___,___,___
(4)	Total (1+2+3) O&M expenses	$ ___,___,___

35. If you were to make a major capital improvement in your POTW, what would be the method of raising capital?
[Mark ☒ for all that apply]

a. ☐ bond issue
b. ☐ increase user rates
c. ☐ loan
d. ☐ other (specify) ____________________

H SEWAGE SLUDGE USE AND DISPOSAL PRACTICES

36. Indicate below the sewage sludge use and disposal practices used during 1988. Please provide further information on the individual practice(s) by completing the appropriate section(s).
[Mark ☒ for all that apply]

a.	☐	Land application	(Complete Section II, pages 17-24)
b.	☐	Distribution and marketing	(Complete Section III, pages 25-28)
c.	☐	Incineration	(Complete Section IV, pages 29-36)
d.	☐	Monofill	(Complete Section V, pages 37-42)
e.	☐	Co-disposal landfill	(Complete Section VI, pages 43-46)
f.	☐	Ocean disposal	(Complete Section VII, pages 47-50)

Fill out all of the Sections marked above before proceeding to the Certification portion below.

I CERTIFICATION

[Please be certain you have completed all required sections of this questionnaire (see above) before you fill out and sign this Certification]

37. I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

a. Please print: Last name First name M.I.

b. Title

c. Signature

d. Date of signature Month Day Year

Sections II through VII follow

When all required Sections are completed, including the above Certification, follow the mailing instructions on page iii to return the Questionnaire to EPA.

Enter POTW NPDES No. ☐☐☐☐☐☐☐☐☐☐☐

SECTION II. LAND APPLICATION

Land application is the application of liquid, dewatered, dried, or composted sewage sludge to the land by surface spraying, surface spreading, or subsurface injection. Sludge may be applied to land intended for a number of end uses including, but not limited to, cropland, pasture, commercially grown turf, silviculture, land for reclamation, and dedicated sites. The sludge may be applied by the POTW or by a distributor or end user under a contract or similar control mechanism with the POTW. Note that in this definition the POTW has **direct control over the application of sewage sludge.**

PART A GENERAL LAND APPLICATION PRACTICE INFORMATION

1. For each land category where sewage sludge was applied during 1988, indicate the percentage of land applied sewage sludge used for that category. (Information throughout Section II is requested on a land category basis and not on individual site basis.)

	Land Category	% of land applied sewage sludge
a.	Animal feed crop land (not pasture)	☐☐☐ %
b.	Dedicated land for sewage sludge disposal	☐☐☐ %
c.	Golf courses	☐☐☐ %
d.	Human food crop land	☐☐☐ %
e.	Land reclamation	☐☐☐ %
f.	Landscape contractors	☐☐☐ %
g.	Municipal parks and highways	☐☐☐ %
h.	Pasture land	☐☐☐ %
i.	Silviculture land	☐☐☐ %
j.	Other (specify) ______________________	☐☐☐ %
	Total =	100 %

2. Indicate the process used to prepare the sewage sludge before it was land applied. [Mark ☒ for all that apply]

a. ☐ aerobic digestion
b. ☐ air drying
c. ☐ anaerobic digestion
d. ☐ composting: heat drying
e. ☐ composting: static aerated pile
f. ☐ composting: windrow
g. ☐ composting: within vessel

h. ☐ dewatering
i. ☐ heat treatment
j. ☐ lime addition
k. ☐ other (specify) ______________________
l. ☐ none **[Skip to Item 5]**

3. Indicate the percentages of your land applied sewage sludge that were composted on-site, composted off-site, and not composted.

a.	Composted on-site	____	%
b.	Composted off-site	____	%
c.	Not composted	____	%
	Total	100	%

4. If sewage sludge was composted before it was land applied, indicate the bulking (dilution) procedure.
[Mark ☒ in one box only]

a. ☐ not applicable, sewage sludge not composted **[Skip to Item 5]**
b. ☐ bulking performed [Indicate the bulking material and ratio]
   (1) bulking material (specify) ____________
   (2) ____ parts bulking agent to 1 part sludge by volume
   or
   (3) ____ parts bulking agent to 1 part sludge by weight

5. Estimate the annual average % available nitrogen and phosphorus in the sewage sludge during 1988?

a. ___.__ % available nitrogen
b. ___.__ % available phosphorus

6. In the past five years, was land application **initiated** as a means for your sewage sludge end use?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 9]**
b. ☐ Yes [Continue]

7. Which of the following practices were replaced by land application for your sewage sludge end use?
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ distribution and marketing
d. ☐ incineration
e. ☐ monofill
f. ☐ ocean disposal
g. ☐ surface disposal
h. ☐ other (specify) ____________

8. Which of the following best indicate the reasons why the POTW initiated land application?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining past practice
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over past practice
f. ☐ due to regulatory requirements
g. ☐ due to restricted landfill capacity
h. ☐ other (specify) ______

9. Are any plans underway to shift some or all of your sewage sludge disposal practice from land application to alternative disposal practices?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 12]**
b. ☐ Yes [Continue]

10. Indicate the practices that you are currently evaluating as an alternative.
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ distribution and marketing
d. ☐ incineration
e. ☐ monofill
f. ☐ surface disposal
g. ☐ other (specify) ______

11. Which of the following best indicate the reasons for your planned change?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining land application practice
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over land application practice
f. ☐ due to regulatory requirements
g. ☐ other (specify) ______

12. If sewage sludge is currently applied to agricultural land (e.g., animal feed crop, human food crop, pasture land), and regulatory requirements prevented continued use of this type of land application, is non-agricultural land available as an alternative? [Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes
c. ☐ N/A, sewage sludge is not currently land applied to agricultural land

13. If land application were no longer a viable option, which of the following disposal alternatives would you consider as likely immediate replacement(s). Also, estimate the percentage of your sewage sludge land applied during 1988 that would be disposed of by the identified alternatives.

	Alternative	Yes	No	Percent shifted
a.	Co-disposal at existing municipal landfill	☐	☐	___ %
b.	Co-incineration	☐	☐	___ %
c.	Distribution and marketing	☐	☐	___ %
d.	Incineration at a newly constructed on-site incinerator	☐	☐	___ %
e.	Incineration at an existing on-site incinerator	☐	☐	___ %
f.	Incineration at an off-site incinerator	☐	☐	___ %
g.	Monofill	☐	☐	___ %
h.	Surface disposal	☐	☐	___ %
i.	Other (specify) ____________________	☐	☐	___ %
			Total =	1 0 0 %

14. Estimate below the 1988 annual operating and maintenance costs for sewage sludge land application disposal practice only. (Do not include any capital costs or any expenses associated with wastewater treatment processes or other sludge disposal practices.)

1988 Annual O&M costs for sewage sludge land application $___,___,___

[Continue to Part B on page 21. Part B is a follow-up of Item 1 on page 17 and addresses each individual land category separately]

12. If sewage sludge is currently applied to agricultural land (e.g., animal feed crop, human food crop, pasture land), and regulatory requirements prevented continued use of this type of land application, is non-agricultural land available as an alternative?
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes
c. ☐ N/A, sewage sludge is not currently land applied to agricultural land

13. If land application were no longer a viable option, which of the following disposal alternatives would you consider as likely immediate replacement(s). Also, estimate the percentage of your sewage sludge land applied during 1988 that would be disposed of by the identified alternatives.

	Alternative	Yes	No	Percent shifted
a.	Co-disposal at existing municipal landfill	☐	☐	☐☐☐ %
b.	Co-incineration	☐	☐	☐☐☐ %
c.	Distribution and marketing	☐	☐	☐☐☐ %
d.	Incineration at a newly constructed on-site incinerator	☐	☐	☐☐☐ %
e.	Incineration at an existing on-site incinerator	☐	☐	☐☐☐ %
f.	Incineration at an off-site incinerator	☐	☐	☐☐☐ %
g.	Monofill	☐	☐	☐☐☐ %
h.	Surface disposal	☐	☐	☐☐☐ %
i.	Other (specify) ____________________	☐	☐	☐☐☐ %
			Total =	1 0 0 %

14. Estimate below the 1988 annual operating and maintenance costs for sewage sludge land application disposal practice only. (Do not include any capital costs or any expenses associated with wastewater treatment processes or other sludge disposal practices.)

1988 Annual O&M costs for sewage sludge land application $ ☐☐☐,☐☐☐,☐☐☐

[Continue to Part B on page 21. Part B is a follow-up of Item 1 on page 17 and addresses each individual land category separately]

PART B INDIVIDUAL LAND APPLICATION PRACTICE INFORMATION

INSTRUCTIONS

- **Complete a separate copy of Part B (Items 15 through 31) for each land category identified in Item 1 on page 17. For example, if you identified human food crop land and golf courses, you should complete two Part Bs of this section.**
- **Make photocopies of blank Part B (pages 21-24) if you identified more than one land category.**
- **Insert all completed land application Part Bs back in the questionnaire.**
- **Number each copy sequentially in the box provided below.**

15. Copy # ☐☐

16. Indicate which land category is being reported on this copy of Part B.
[Mark ☒ in one box only]

a. ☐ Animal feed crop land (not pasture)
b. ☐ Dedicated land for sewage sludge disposal
c. ☐ Golf courses
d. ☐ Human food crop land (specify main food crops) (1) ________
(2) ________
(3) ________

e. ☐ Land reclamation

f. ☐ Landscape contractors
g. ☐ Municipal parks and highways
h. ☐ Pasture land
i. ☐ Silviculture land
j. ☐ Other (specify) ________

17. For this land category, estimate the average amount of sewage sludge applied per acre per application, average number of acres treated per application, and the number of applications in 1988.

a. Average tons (wet weight) per acre per application ☐☐☐
b. Average number of acres per application ☐☐☐☐
c. Number of applications in 1988 ☐☐☐

18. Was your sewage sludge application rate based on available nitrogen and phosphorus amounts in the sludge?

a. ☐ No
a. ☐ Yes
c. ☐ Not applicable

19. What percentage of your sewage sludge used for this land category was composted?

☐☐☐ % of sewage sludge is composted

20. Who was the owner of the land used for this application of sewage sludge?
[Mark ☒ for all that apply]

a. ☐ municipality
b. ☐ POTW
c. ☐ private party
d. ☐ State
e. ☐ other (specify) ____________________

21. What was the method of sewage sludge application?
[Mark ☒ for all that apply]

a. ☐ injection of liquid sewage sludge
b. ☐ surface spreading of liquid sewage sludge
c. ☐ surface spreading of dewatered cake
d. ☐ spraying
e. ☐ other (specify) ____________________

22. Indicate who performed the sewage sludge application.
[Mark ☒ for all that apply]

a. ☐ contractor
b. ☐ farmer or customer
c. ☐ municipal employees (other than POTW personnel)
d. ☐ POTW personnel **[Skip to Item 24]**
e. ☐ other (specify) ____________

23. What type of arrangement or mechanism was used to maintain control over the ultimate end use of the sewage sludge?
[Mark ☒ for all that apply]

a. ☐ inter-agency agreements
b. ☐ written contract
c. ☐ other written agreement (specify) ____________________
d. ☐ other (specify) ____________________
e. ☐ none

24. **Was sewage sludge incorporated into the soil during or after application?**
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 25]**
b. ☐ Yes **[Indicate the most prevalent method of incorporation by marking ☒ in one of the boxes below]**

(1) ☐ disking
(2) ☐ injection
(3) ☐ minimum till
(4) ☐ plowing
(5) ☐ other (specify) ______________

25. **Was the land application site(s) restricted to this POTW's sewage sludge only?**

a. ☐ Yes **[Skip to Item 26]**
b. ☐ No **[Indicate the other sludges and wastes disposed of at this site(s)]**

(1) ☐ agricultural wastes (e.g., manure)
(2) ☐ food processing wastes
(3) ☐ holding/septic tank wastes
(4) ☐ industrial sludges
(5) ☐ industrial wastes
(6) ☐ sludges from other municipalities
(7) ☐ other (specify) ______________

26. **What measures were used to restrict access to the application area?**
[Mark ☒ for all that apply]

a. ☐ none **[Skip to Item 27]**
b. ☐ fences
c. ☐ signs
d. ☐ other (specify) ______________

27. **Were wells used to monitor the groundwater in the vicinity of the application area?**
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes

28. **What type of management practices were used to prevent runoff to surface waters?**

a. ☐ none **[Skip to Item 29]**
b. ☐ buffer zone
c. ☐ conservation tillage
d. ☐ maximum slope requirement
e. ☐ sediment basin
f. ☐ terracing/berming
g. ☐ other (specify) ______________

29. If you were required to reduce your current whole sludge application rates (i.e., tons per year) to this land category, could the rates be lowered while retaining a minimum level of sludge effectiveness?

a. ☐ No **[Skip remaining questions in this Part B]**
b. ☐ Yes [Continue]
c. ☐ Not applicable to this land category

30. Estimate the maximum percentage by which whole sewage sludge application rates could be reduced.

Maximum percent reduction feasible ⊔⊔ %

31. How would you use or dispose of the sewage sludge available as a result of reduced application rates?

a. ☐ increase acreage within this land application category
b. ☐ apply to other land application categories
c. ☐ pursue other disposal practices (not land application)
d. ☐ other (specify) ____________________

[End of Part B, Land Application Section]

Enter POTW NPDES No. __________

SECTION III. DISTRIBUTION AND MARKETING

Distribution and marketing is the give-away, transfer, or sale of sewage sludge in either bagged or bulk form. The POTW does not apply the sludge and the end-user applying the sludge is **not under the direct control of the POTW**. Note that a label or notice provided with the sewage sludge does not constitute direct control.

1. Enter the percentage of sewage sludge distributed and marketed to the following end users during 1988.

a.	Compost brokers/contractors	____ %
b.	Farmers	____ %
c.	General public (e.g., for lawn and garden use)	____ %
d.	Golf courses	____ %
e.	Landscape contractors	____ %
f.	Municipalities (e.g., for parks and highways)	____ %
g.	Other (specify) ____________	____ %
h.	Other (specify) ____________	____ %
	Total	100 %

2. Indicate the process used to prepare the sewage sludge before it was distributed or marketed.
[Mark ☒ in one or more boxes]

a. ☐ aerobic digestion
b. ☐ air drying
c. ☐ anaerobic digestion
d. ☐ composting: heat drying
e. ☐ composting: static aerated pile
f. ☐ composting: windrow
g. ☐ composting: within vessel

h. ☐ dewatering
i. ☐ heat treatment
j. ☐ lime addition
k. ☐ other (specify) ____________

3. If sewage sludge was composted before it was distributed or marketed, indicate the bulking (dilution) procedure.
[Mark ☒ in one box only]

a. ☐ not applicable, sewage sludge not composted
b. ☐ bulking performed [Indicate the bulking material and ratio]

(1) bulking material (specify) ____________
(2) ____ parts bulking agent to 1 part sludge by volume
or
(3) ____ parts bulking agent to 1 part sludge by weight

4. Estimate the annual average % available nitrogen and phosphorus in the sewage sludge product leaving the POTW during 1988.

a. |__|__| . |__| % available nitrogen
b. |__|__| . |__| % available phosphorus

5. Did the POTW provide written instructions on how to use the sludge product?
[Mark ☒ in one box only]

a. ☐ No [Skip to Item 6]
b. ☐ Yes [Indicate the nature of the instructions by marking ☒ in one or more boxes below]

(1) ☐ instructions prohibit certain end uses
(2) ☐ instructions caution against certain end uses
(3) ☐ instructions specify acceptable uses
(4) ☐ instructions suggest quantity application limits
(5) ☐ instructions suggest frequency application limits

(6) ☐ specifications of micronutrients
(7) ☐ specifications of nitrogen and phosphorus concentrations
(8) ☐ specifications of acceptable pH levels in the soil
(9) ☐ indications that the product is derived from sewage sludge
(10) ☐ other (specify) ____________________
____

6. Was the sludge product given away or sold?
[Mark ☒ in all that apply]

a. ☐ Given away
b. ☐ Sold [Indicate the average price that is charged in one of the units below]

(1) $|__|__|__| per dry, U.S. ton
or
(2) $|__| . |__|__| per cubic yard

7. Was the sludge product bagged or distributed in bulk?
[Mark ☒ in all that apply]

a. ☐ bagged
b. ☐ distributed in bulk

8. In the past five years, was distribution and marketing initiated as a means for your sewage sludge disposal?
[Mark ☒ in one box]

a. ☐ No [Skip to Item 11]
b. ☐ Yes [Continue]

9. Which of the following practices were replaced by distribution and marketing for your sewage sludge end use?
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ incineration
d. ☐ land application
e. ☐ monofill
f. ☐ ocean disposal
g. ☐ surface disposal
h. ☐ other (specify) ____________________

10. Which of the following best indicate the reasons why the POTW initiated distribution and marketing?
[Mark ☒ for all that apply]

a. ☐ as a profit venture to offset operating costs
b. ☐ due to change in wastewater treatment technology
c. ☐ due to cost of maintaining past practice
d. ☐ due to increased sewage sludge volume
e. ☐ due to permit conditions

f. ☐ due to public concern over past practice
g. ☐ due to regulatory requirements
h. ☐ due to restricted landfill capacity
i. ☐ other (specify) ____________________
____

11. Are any plans underway to shift some or all of your sewage sludge disposal practice from distribution and marketing to alternative disposal practices?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 14]**
b. ☐ Yes [Continue]

12. Indicate the practices that you are currently evaluating as an alternative.
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ incineration
d. ☐ land application
e. ☐ monofill
f. ☐ surface disposal
g. ☐ other (specify) ____________________

13. Which of the following best indicate the reasons for your planned change? [Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining distribution and marketing practice
c. ☐ due to lack of marketing knowledge
d. ☐ due to lack of marketing opportunities
e. ☐ due to increased sewage sludge volume

f. ☐ due to permit conditions
g. ☐ due to public concern over distribution and marketing
h. ☐ due to regulatory requirements
i. ☐ other (specify) ______________________________

14. If distribution and marketing were no longer a viable option, which of the following disposal alternatives would you consider as likely immediate replacement(s). Also, estimate the percentage of your sewage sludge distributed and marketed during 1988 that would be disposed of by the identified alternatives.

	Alternative	Yes	No	Percent shifted
a.	Co-disposal at existing municipal landfill	☐	☐	___ %
b.	Co-incineration	☐	☐	___ %
c.	Land application	☐	☐	___ %
d.	Incineration at a newly constructed on-site incinerator	☐	☐	___ %
e.	Incineration at an existing on-site incinerator	☐	☐	___ %
f.	Incineration at an off-site incinerator	☐	☐	___ %
g.	Monofill	☐	☐	___ %
h.	Surface disposal	☐	☐	___ %
i.	Other (specify) ______________	☐	☐	___ %
			Total =	100 %

15. Estimate below the 1988 annual operating and maintenance costs for sewage sludge distribution and marketing disposal practice only. (Include such costs as composting, bulking material, utilities, packaging, advertising, and transportation. Do not include any capital costs or any expenses associated with wastewater treatment processes or other sludge disposal practices.)

1988 Annual O&M costs for sewage sludge distribution and marketing $___,___,___

[End of Section III - Distribution and Marketing]

Enter POTW NPDES No. ☐☐☐☐☐☐☐☐☐

SECTION IV. INCINERATION

Incineration is the treatment of sewage sludge exclusively in an enclosed device using controlled flame combustion. Includes all sewage sludge incinerators on site and also, those facilities transporting sewage sludge to another facility that operates sewage sludge incinerators. THIS SECTION DOES NOT PERTAIN TO CO-INCINERATION OF SEWAGE SLUDGE WITH OTHER WASTE MATERIALS.

PART A GENERAL INCINERATION INFORMATION

1. How many individual incinerators were used to incinerate your sewage sludge during 1988?

   a. ☐☐ on-site incinerators
   b. ☐☐ off-site incinerators
   c. ☐☐ total number of incinerators

2. In the past five years, was incineration **initiated** as a means for your sewage sludge disposal?
   [Mark ☒ in one box]

   a. ☐ No **[Skip to Item 5]**
   b. ☐ Yes [Continue]

3. Which of the following practices were replaced by incineration for your sewage sludge disposal?
   [Mark ☒ for all that apply]

   a. ☐ co-disposal landfill
   b. ☐ co-incineration
   c. ☐ distribution and marketing
   d. ☐ land application
   e. ☐ monofill
   f. ☐ ocean disposal
   g. ☐ surface disposal
   h. ☐ other (specify) ____________________

4. Which of the following best indicate the reasons why the POTW initiated incineration?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining past practice
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over past practice
f. ☐ due to regulatory requirements
g. ☐ due to restricted landfill capacity
h. ☐ other (specify) ______________________________

5. Are any plans underway to shift some or all of your sewage sludge disposal practice from incineration to alternative disposal practices?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 8]**
b. ☐ Yes [Continue]

6. Indicate the use and disposal practices that you are currently evaluating as an alternative.
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ distribution and marketing
d. ☐ land application
e. ☐ monofill
f. ☐ surface disposal
g. ☐ other (specify) ______________________________

7. Which of the following best indicate the reasons for your planned change?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining incineration
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over incineration practice
f. ☐ due to regulatory requirements
g. ☐ other (specify) ______________________________

8. Which of the following would you use to further reduce sewage sludge pollutants in incinerator emissions?
[Mark ☒ for all that apply]

a. ☐ additional pretreatment requirements for industrial dischargers that are the source of the problem pollutants
b. ☐ addition of air pollution control devices (e.g., electrostatic precipitators, fabric filters, venturi scrubbers) to control emission of the problem pollutants
c. ☐ improved instrumentation (e.g., monitoring devices, computer control)
d. ☐ other changes to incinerator (specify) ______________________
e. ☐ reduction of sewage sludge feed rate
f. ☐ other (specify) ______________________

9. If incineration were no longer a viable option, which of the following disposal alternatives would you consider as likely immediate replacement(s). Also, estimate the percentage of your sewage sludge incinerated during 1988 that would be disposed of by the identified alternatives:

	Alternative	Yes	No	Percent shifted
a.	Co-disposal at existing municipal landfill	☐	☐	___ %
b.	Co-incineration	☐	☐	___ %
c.	Distribution and marketing	☐	☐	___ %
d.	Land application	☐	☐	___ %
e.	Monofill	☐	☐	___ %
f.	Surface disposal	☐	☐	___ %
g.	Other (specify) ______________	☐	☐	___ %
			Total =	100 %

10. Estimate below the 1988 annual operating and maintenance costs for sewage sludge incineration disposal practice only. (Do not include any capital costs or any expenses associated with wastewater treatment processes or other sludge disposal practices.)

1988 Annual O&M costs for sewage sludge incineration $___,___,___

[Continue to Part B on page 33. Part B addresses each incinerator separately]

PART B INDIVIDUAL INCINERATOR INFORMATION

INSTRUCTIONS

- **Complete a separate copy of Part B (Items 11 through 26) for each individual incinerator included in Item 1 on page 29. For example, if the total number of incinerators identified is 4, you should complete four Part Bs of this section.**
- **Make photocopies of blank Part B (pages 33-36) if you identified more than one incinerator.**
- **Insert all completed incineration Part Bs back in the questionnaire.**
- **Number each copy sequentially in the box provided below.**

11. Incinerator # ☐☐

12. Please provide the name and/or identification number assigned to this incinerator.

____

13. Where is this incinerator located?
[Mark ☒ in one box only]

a. ☐ on-site, at this POTW **[Skip to Item 14]**
b. ☐ off-site [Indicate below the physical location of this incinerator]

(1) facility name _______________
(2) street address _______________
(3) city, town _______________
(4) county _______________
(5) state ___ (6) zip code _____ - ____

14. How often was the moisture content of the sludge fed to this incinerator tested?

[Mark ☒ in one box only]
___ times per ☐ hour ☐ day ☐ month ☐ year

15. How often was the volatile solids content of the sludge fed to this incinerator tested?

[Mark ☒ in one box only]
___ times per ☐ hour ☐ day ☐ month ☐ year

16. Indicate below the incinerator type, rated capacity to burn sewage sludge, annual throughput of sewage sludge, age, days operated during 1988, and the percent volatile solids and moisture of the sewage sludge entering the incinerator.

a. Type [Mark ☒ in one box only]

(1) ☐ electric furnace
(2) ☐ fluid bed
(3) ☐ multiple hearth
(4) ☐ rotary kiln
(5) ☐ other (specify) ______________________

b. Rated capacity ⌴⌴,⌴⌴⌴ lbs./hr. dry sludge feed rate

c. Annual throughput ⌴⌴⌴,⌴⌴⌴ dry tons/yr.

d. Age ⌴⌴ years

e. Number of days operated in 1988 ⌴⌴⌴ days

f. Percent volatile solids of sludge feed ⌴⌴ %

g. Percent moisture content of sludge feed ⌴⌴ %

17. Indicate if this incinerator has monitoring devices or continuous recording devices to record the parameters below.
[Mark ☒ no or yes for each parameter and device]

		Monitors		Continuous recorders	
		No	Yes	No	Yes
a.	Carbon monoxide in flue gas	☐	☐	☐	☐
b.	Combustion air oxygen	☐	☐	☐	☐
c.	Combustion temperature	☐	☐	☐	☐
d.	Furnace draft	☐	☐	☐	☐
e.	Pressure drop of scrubber	☐	☐	☐	☐
f.	Sludge feed rate	☐	☐	☐	☐
g.	Stack temperature	☐	☐	☐	☐
h.	Total hydrocarbons in flue gas	☐	☐	☐	☐
i.	Other (specify) __________	☐	☐	☐	☐

18. Does this incinerator have a baghouse or electrostatic precipitator for incinerator emissions control?
[Mark ☒ for all that apply]

a. ☐ no **[Skip to Item 19]**
b. ☐ baghouse or fabric filter
c. ☐ dry electrostatic precipitator
d. ☐ wet electrostatic precipitator

19. What other air pollution control system(s) are present for this incinerator? Indicate the minimum operating pressure drop, in inches of water, for system(s) present.
[Mark ☒ for all that apply]

		Equipment	Minimum operating pressure drop, inches of water
a.	☐	dry cyclone	└┴┴┘
b.	☐	impinger	└┴┴┘
c.	☐	spray chamber	└┴┴┘
d.	☐	venturi	└┴┴┘
e.	☐	venturi/impinger	└┴┴┘
f.	☐	venturi/packed tower	└┴┴┘
g.	☐	wet cyclone	└┴┴┘
h.	☐	wet cyclone/impinger	└┴┴┘
i.	☐	other (specify) ____________________	└┴┴┘
j.	☐	none	

20. Are there plans to upgrade the air pollution control systems during the next 3 years for this incinerator?
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 22]**
b. ☐ Yes [Continue]

21. Indicate the type of air pollution control systems that will be added to this incinerator.
[Mark ☒ for all that apply]

a. ☐ baghouse or fabric filter
b. ☐ dry cyclone
c. ☐ dry electrostatic precipitator
d. ☐ impinger

e. ☐ spray chamber
f. ☐ venturi
g. ☐ venturi/impinger
h. ☐ venturi/packed tower

i. ☐ wet cyclone
j. ☐ wet cyclone/impinger
k. ☐ wet electrostatic precipitator
l. ☐ other (specify) ____________________

22. Does this incinerator currently have an afterburner installed?
[Mark ☒ in one box only]

a. ☐ no **[Skip to Item 23]**
b. ☐ afterburner with heat exchanger
c. ☐ afterburner without heat exchanger

23. For the incinerator emission stack, provide the following:

a. Stack identification number └┴┴┴┘

b. Height in feet └┴┴┘

c. Exit inside diameter in feet └┴┘

d. Exit temperature of flue gases in °F └┘,└┴┴┘

e. Exit velocity of flue gases in ft./sec. └┴┴┘

f. Other incinerators using this stack
[Use the sequential numbers assigned in Item 11, page 33, to identify these incinerators. If no other incinerators use this stack, enter NA]

(1) └┴┘
(2) └┴┘
(3) └┴┘
(4) └┴┘

24. List the dimensions, in feet, of the nearest building to the stack associated with this incinerator and the distance of the building from the stack.

a. Length (ft) └┴┴┘
b. Width (ft) └┴┴┘
c. Height (ft) └┴┴┘
d. Distance from the stack (ft) └┘,└┴┴┘

25. Does the ash handling system for this incinerator have a means for controlling ash particulates emission?

a. ☐ No
b. ☐ Yes (specify) ______________________________

26. Where is this incinerator ash disposed?
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ metal extraction processing
c. ☐ recycling (e.g., making bricks)
d. ☐ storage lagoon
e. ☐ waste pile
f. ☐ other (specify) ______________________________

[End of Part B, Incineration Section]

Enter POTW NPDES No. ☐☐☐☐☐☐☐☐☐

SECTION V. MONOFILL

A monofill is a controlled area of land that contains one or more sewage sludge units. A sewage sludge unit is defined as a controlled area of land where only sewage sludge is placed. The sludge is covered with a cover material at the end of each operating day or at more frequent intervals.

PART A GENERAL MONOFILL INFORMATION

1. How many monofills were used in 1988 to dispose of your sewage sludge?

   ☐☐ monofills

2. In the past five years, was monofilling **initiated** as a means for your sewage sludge disposal?
   [Mark ☒ in one box]

   a. ☐ No **[Skip to Item 5]**
   b. ☐ Yes [Continue]

3. Which of the following practices were replaced by monofilling for your sewage sludge disposal?
   [Mark ☒ for all that apply]

   a. ☐ co-disposal landfill
   b. ☐ co-incineration
   c. ☐ distribution and marketing
   d. ☐ incineration
   e. ☐ land application
   f. ☐ ocean disposal
   g. ☐ surface disposal
   h. ☐ other (specify) ____________________

4. Which of the following best indicate the reasons why the POTW initiated use of monofills?
   [Mark ☒ for all that apply]

   a. ☐ due to change in wastewater treatment technology
   b. ☐ due to cost of maintaining past practice
   c. ☐ due to increased sewage sludge volume
   d. ☐ due to permit conditions

   e. ☐ due to public concern over past practice
   f. ☐ due to regulatory requirements
   g. ☐ due to restricted co-disposal landfill capacity
   h. ☐ other (specify) ____________________
   ____

5. Are any plans underway to shift some or all of your sewage sludge disposal practice from monofill to alternative disposal practices?
[Mark ☒ in one box]

a. ☐ No [Skip to Item 8]
b. ☐ Yes [Continue]

6. Indicate the practices that you are currently evaluating as an alternative.
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ distribution and marketing
d. ☐ incineration
e. ☐ land application
f. ☐ surface disposal
g. ☐ other (specify) ____________

7. Which of the following best indicate the reasons for your planned change?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining sewage sludge monofills
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over monofill practice
f. ☐ due to regulatory requirements
g. ☐ due to restricted monofill capacity
h. ☐ other (specify) ____________
____

8. Which of the following would you use to control the release of pollutants from your monofills?
[Mark ☒ for all that apply]

a. ☐ no current releases [Skip to Item 9]
b. ☐ addition of liner and leachate collection system for the monofill
c. ☐ additional pretreatment requirements for industrial dischargers that are the source of problem pollutants
d. ☐ installation of runon/runoff controls for the monofill
e. ☐ other (specify) ____________

9. Do you have access to or are you in the process of securing additional monofill space for sewage sludge disposal?
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes

10. If monofilling were no longer a viable option, which of the following disposal alternatives would you consider as likely immediate replacement(s)? Also, estimate the percentage of your sewage sludge monofilled during 1988 that would be disposed of by the identified alternatives:

	Alternative	Yes	No	Percent shifted
a.	Co-disposal at existing municipal landfill	☐	☐	___ %
b.	Co-incineration	☐	☐	___ %
c.	Distribution and marketing	☐	☐	___ %
d.	Incineration at a newly constructed on-site incinerator	☐	☐	___ %
e.	Incineration at existing on-site incinerator	☐	☐	___ %
f.	Incineration at an off-site incinerator	☐	☐	___ %
g.	Land application	☐	☐	___ %
h.	Surface disposal	☐	☐	___ %
i.	Other (specify) ____________	☐	☐	___ %
			Total =	1 0 0 %

11. Indicate below the 1988 annual operating and maintenance costs for sewage sludge monofill disposal practice only. (Do not include any capital costs or any expenses associated with wastewater treatment processes or other sludge disposal practices.)

1988 Annual O&M costs for sewage sludge monofills $ ___ , ___ , ___

[Continue to Part B on page 41. Part B addresses each monofill separately]

PART B INDIVIDUAL MONOFILL INFORMATION

INSTRUCTIONS

- **Complete a separate copy of Part B (Items 12 through 22) for each monofill included in Item 1 on page 37. For example, if the total number of monofills identified is 2, you should complete two Part Bs of this section.**
- **Make photocopies of blank Part B (pages 41-42) if you identified more than one monofill.**
- **Insert all completed monofill Part Bs back in the questionnaire.**
- **Number each copy sequentially in the box provided below.**

12. Monofill # ☐☐

13. Please provide the name and/or identification number assigned to this monofill.

____

14. Who is the owner of this monofill?
[Mark ☒ in one box only]

a. ☐ your POTW
b. ☐ other POTW
c. ☐ municipality
d. ☐ private party
e. ☐ State
f. ☐ other (specify) ______________________

15. Who is the operator of this monofill?
[Mark ☒ in one box only]

a. ☐ your POTW
b. ☐ other POTW
c. ☐ municipality
d. ☐ private party
e. ☐ State
f. ☐ other (specify) ______________________

16. What was the required percent solids of sewage sludge disposed of in this monofill?
[Mark ☒ in one box only]

a. ☐ no requirements
b. ☐ greater than ⊔⊔ % solids

17. Was there a tipping fee for disposal of sewage sludge in this monofill?
[Mark ☒ in one box only]

a. ☐ No [Skip to Item 18]
b. ☐ Yes [Indicate the tipping fee in one of the units of measure below]
(1) $___.___ per ton
or
(2) $___.___ per cubic yard

18. How many miles is this monofill from the POTW?

____ miles (one-way) or ☐ [check this box if monofill is on-site]

19. Who transported the sewage sludge to this monofill?
[Mark ☒ for all that apply]

a. ☐ independent contractor
b. ☐ monofill owner
c. ☐ POTW
d. ☐ other (specify) ________________

20. Describe the discharge controls at this monofill.
[Mark ☒ for all that apply]

a. ☐ cover practices
b. ☐ leachate collection systems
c. ☐ leachate treatment systems
d. ☐ liners, natural
e. ☐ liners, synthetic
f. ☐ methane controls
g. ☐ monitoring wells
h. ☐ runon/runoff controls
i. ☐ no controls
j. ☐ other (specify) ________________

21. Estimate the depth to groundwater from the bottom of this monofill.
[Mark ☒ in one box only]

a. ☐ no known groundwater source below monofill
b. ☐ monofill is located in groundwater
c. ☐ 0 to 0.5 meters
d. ☐ 0.6 to 2 meters
e. ☐ 2.1 to 8 meters
f. ☐ 8.1 to 12 meters
g. ☐ greater than 12 meters

22. Estimate how long sewage sludge can be disposed of in this monofill at the current rate before the capacity limit is reached.

____ years

[End of Part B, Monofill Section]

Enter POTW NPDES No. ˽˽˽˽˽˽˽˽˽

SECTION VI. CO-DISPOSAL LANDFILL

A co-disposal landfill is an area of land or an excavation that is used for permanent disposal of solid waste, residuals, and sewage sludges. These include, but are not limited to, municipal landfills that accept sewage sludge for disposal in conjunction with other waste materials.

PART A GENERAL CO-DISPOSAL LANDFILL INFORMATION

1. How many co-disposal landfills were used in 1988 to dispose of your sewage sludge?

˽˽ co-disposal landfills

2. In the past five years, was co-disposal landfill **initiated** as a means for your sewage sludge disposal?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 5]**
b. ☐ Yes [Continue]

3. Which of the following practices were replaced by co-disposal landfill for your sewage sludge disposal?
[Mark ☒ for all that apply]

a. ☐ distribution and marketing
b. ☐ co-incineration
c. ☐ incineration
d. ☐ land application
e. ☐ monofill
f. ☐ ocean disposal
g. ☐ surface disposal
h. ☐ other (specify) ______

4. Which of the following best indicate the reasons why the POTW initiated use of co-disposal landfill?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining past practice
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over past practice
f. ☐ due to regulatory requirements
g. ☐ due to restricted monofill capacity
h. ☐ other (specify) ______

5. Are any plans underway to shift some or all of your sewage sludge disposal practice from co-disposal landfill to alternative disposal practices?
[Mark ☒ in one box]

a. ☐ No [Skip to Item 8]
b. ☐ Yes [Continue]

6. Indicate the practices that you are currently evaluating as an alternative.
[Mark ☒ for all that apply]

a. ☐ distribution and marketing
b. ☐ co-incineration
c. ☐ incineration
d. ☐ land application
e. ☐ monofill
f. ☐ surface disposal
g. ☐ other (specify) ____________________

7. Which of the following best indicate the reasons for your planned change?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining co-disposal landfills
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over co-disposal landfill practice
f. ☐ due to regulatory requirements
g. ☐ due to restricted landfill capacity
h. ☐ other (specify) ____________________
____

8. Do you have access to or are you in the process of securing additional landfill space for sewage sludge disposal?
[Mark ☒ in one box only]

a. ☐ No
b. ☐ Yes

9. Indicate below the 1988 annual operating and maintenance costs for sewage sludge co-disposal landfill practice only. (Do not include any capital costs or any expenses associated with wastewater treatment processes or other sludge disposal practices.)

1988 Annual O&M costs for sewage sludge co-disposal landfills $___,___,___

[Continue to Part B on page 45. Part B addresses each co-disposal landfill separately]

PART B INDIVIDUAL CO-DISPOSAL LANDFILL INFORMATION

- **Complete a separate copy of Part B (Items 10 through 21) for each co-disposal landfill reported in Item 1 on page 43. For example, if the total number of co-disposal landfills identified is 2, you should complete two Part Bs of this section.**
- **Make photocopies of blank Part B (pages 45-46) if you identified more than one co-disposal landfill.**
- **Insert all completed co-disposal landfill Part Bs back in the questionnaire.**
- **Number each copy sequentially in the box provided below.**

10. Co-disposal landfill # ☐☐

11. Provide the name and/or identification number assigned to this co-disposal landfill.

____

12. Who is the owner of this co-disposal landfill?
[Mark ☒ in one box only]

a. ☐ your POTW
b. ☐ other POTW
c. ☐ municipality
d. ☐ private party
e. ☐ State
f. ☐ other (specify) __________________________

13. Who is the operator of this co-disposal landfill?
[Mark ☒ in one box only]

a. ☐ your POTW
b. ☐ other POTW
c. ☐ municipality
d. ☐ private party
e. ☐ State
f. ☐ other (specify) __________________________

14. What was the required percent solids of sewage sludge disposed of in this co-disposal landfill?
[Mark ☒ in one box only]

a. ☐ no requirements
b. ☐ greater than ___ % solids

15. Was there a tipping fee for disposal of sewage sludge in this co-disposal landfill?
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 16]**
b. ☐ Yes [Indicate the tipping fee in one of the units of measure below]

(1) $___.___ per ton **or** (2) $___.___ per cubic yard

16. How many miles is this co-disposal landfill from the POTW?

└┴┴┘ miles (one-way)

17. Who transported the sewage sludge to this co-disposal landfill?
[Mark ☒ for all that apply]

a. ☐ independent contractor
b. ☐ co-disposal landfill owner
c. ☐ POTW
d. ☐ other (specify) ____________________

18. What method is used for sewage sludge disposal in this co-disposal landfill?
[Mark ☒ for all that apply]

a. ☐ sewage sludge is emptied into trenches and buried
b. ☐ sewage sludge is mixed with municipal solid waste and buried
c. ☐ sewage sludge is used as top cover
d. ☐ other (specify) ____________________

19. Describe the discharge controls at this co-disposal landfill.
[Mark ☒ for all that apply]

a. ☐ cover practices
b. ☐ leachate collection systems
c. ☐ leachate treatment systems
d. ☐ liners, natural
e. ☐ liners, synthetic

f. ☐ methane controls
g. ☐ monitoring wells
h. ☐ runon/runoff controls
i. ☐ no controls
j. ☐ other (specify) ____________________

20. What measures exist at this co-disposal landfill to restrict access?
[Mark ☒ for all that apply]

a. ☐ none **[Skip to Item 21]**
b. ☐ fences
c. ☐ signs
d. ☐ other (specify) ____________________

21. Estimate how long sewage sludge can be disposed of in this landfill at the current rate before the capacity limit is reached.

└┴┴┘ years

[End of Part B, Co-disposal Landfill Section]

Enter POTW NPDES No. └┴┴┴┴┴┴┴┴┘

SECTION VII. OCEAN DISPOSAL

Ocean disposal is the dumping or controlled release of sewage sludge from a barge or other vessel into marine water.

NOTE: Questions about the 12 mile site pertain to 1987 only.

1. During 1987, was the 12 mile site (New York bight) used for your sewage sludge ocean disposal?
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 8]**
b. ☐ Yes [Continue]

2. During 1987, what were the sewage sludge discharge rate and the total discharge quantity at the 12 mile site in **dry weight** basis?

a. └┴┴┘,└┴┴┘ tons per hour, dry weight (average discharge rate)
b. └┴┴┘,└┴┴┘ tons total discharge during 1987, dry weight

3. During 1987, was your sewage sludge "pooled" with sewage sludge from other POTWs before it was discharged into marine water at the 12 mile site?
[Mark ☒ in one box only]

a. ☐ No **[Skip to Item 4]**
b. ☐ Yes [List name, city, and state of participating POTW]
(1) ______________________________
(2) ______________________________
(3) ______________________________
(4) ______________________________
(5) ______________________________

4. How many miles is your POTW from the ocean shipping point for the 12 mile site?

└┴┴┘ miles (one way)

5. Estimate below the 1987 operating and maintenance costs for sewage sludge 12 mile site ocean disposal practice only. (Do not include any capital costs or costs associated with wastewater treatment processes or other sewage sludge disposal practices.)

1987 Annual O&M costs for 12 mile site sewage sludge ocean disposal $└┴┘,└┴┴┘,└┴┴┘

6. **During 1988, did you shift some or all of your sewage sludge ocean disposal practice from the 12 mile site to the 106 mile site?**
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 8]**
b. ☐ Yes [Indicate the percentage of sewage sludge disposed at the 12 mile site during 1987 that was disposed at the 106 mile site during 1988]

└┴┴┘ %

7. In light of shifts from the 12 mile site to the 106 mile disposal site, indicate below your **incremental** operating and maintenance costs **per ton**, dry weight basis, for sewage sludge ocean disposal at the 106 mile site instead of at the 12 mile site.

Incremental O&M costs per ton for sewage sludge disposal at the 106 mile site $└┴┴┘ per dry ton **[Skip to Item 9]**

8. **During 1988, was the 106 mile site used for your sewage sludge disposal?**

a. ☐ No **[Skip to Item 13]**
b. ☐ Yes [Continue]

9. **During 1988, what was the sewage sludge discharge rate at the 106 mile site in dry weight basis?**

└┴┴┘,└┴┴┘ tons per hour, dry weight

10. **During 1988, was your sewage sludge "pooled" with sewage sludge from other POTWs before it was discharged into marine water at the 106 mile site?**

a. ☐ No **[Skip to Item 11]**
b. ☐ Yes [List name, city, and state of participating POTW]
(1) ______________________________
(2) ______________________________
(3) ______________________________
(4) ______________________________
(5) ______________________________

11. **How many miles is your POTW from the ocean shipping point for the 106 mile site?**

└┴┴┘ miles (one way)

12. Indicate below the **1988** operating and maintenance costs for sewage sludge 106 mile site ocean disposal practice only. (Do not include any capital costs or costs associated with wastewater treatment processes or other sewage sludge disposal practices.)

1988 Annual O&M costs for 106 mile site sewage sludge ocean disposal $└┴┘,└┴┴┘,└┴┴┘

13. In the past five years, was ocean disposal at either the 12 mile or 106 mile site initiated as a means for your sewage sludge disposal?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 16]**
b. ☐ Yes [Continue]

14. Which of the following practices were replaced by ocean disposal for your sewage sludge disposal?
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ distribution and marketing
d. ☐ incineration
e. ☐ land application
f. ☐ monofill
g. ☐ surface disposal
h. ☐ other (specify) ______

15. Which of the following best indicate the reasons why the POTW initiated ocean disposal?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining past practice
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over past practice
f. ☐ due to regulatory requirements
g. ☐ due to restricted landfill capacity
h. ☐ other (specify) ______
______

16. Prior to the Ocean Dumping Ban Act of 1988, were you in the process of shifting some or all of your sewage sludge disposal practice from ocean disposal to alternate disposal practices?
[Mark ☒ in one box]

a. ☐ No **[Skip to Item 19]**
b. ☐ Yes [Continue]

17. Indicate the practices that you are changing to.
[Mark ☒ for all that apply]

a. ☐ co-disposal landfill
b. ☐ co-incineration
c. ☐ distribution and marketing
d. ☐ incineration
e. ☐ land application
f. ☐ monofill
g. ☐ surface disposal
h. ☐ other (specify) ____________________

18. Which of the following best indicate the reasons for your change?
[Mark ☒ for all that apply]

a. ☐ due to change in wastewater treatment technology
b. ☐ due to cost of maintaining ocean disposal practice
c. ☐ due to increased sewage sludge volume
d. ☐ due to permit conditions

e. ☐ due to public concern over ocean disposal practice
f. ☐ due to regulatory requirements
g. ☐ other (specify) ____________________
____

19. To comply with the requirements of the Ocean Dumping Ban Act of 1988, that the ocean disposal of sewage sludge cease by December 31, 1991, which of the following disposal alternatives would you consider as likely immediate replacement(s)? Also, estimate the percentage of your sewage sludge ocean disposed during 1988 that could be disposed of by the identified alternatives.

	Alternative	Yes	No	Percent shifted
a.	Co-disposal at existing municipal landfill	☐	☐	%
b.	Co-incineration	☐	☐	%
c.	Distribution and marketing	☐	☐	%
d.	Incineration at a newly constructed on-site incinerator	☐	☐	%
e.	Incineration at an existing on-site incinerator	☐	☐	%
f.	Incineration at an off-site incinerator	☐	☐	%
g.	Land application	☐	☐	%
h.	Monofill	☐	☐	%
i.	Surface disposal	☐	☐	%
j.	Other (specify) ____________	☐	☐	%
			Total =	100 %

[End of Section VII - Ocean Disposal]

APPENDIX B

LIST OF POTWs IN THE QUESTIONNAIRE SURVEY

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
35-01-001	Mendenhall Valley Sewer	Borough of Juneau	155 S. Seward Street	Juneau	AK	99801	
45-01-002	Homer WWTP	City of Homer	P.O. Box 335	Homer	AK	99603	
** 45-01-003	Koyukuk W/T Facility	Village of Koyukuk		Koyukuk	AK	99754	
31-02-004	Cypress Ck. Wastewater TP	Florence Board of Water & Sewer	PO Box 1023	Florence	AL	35630	YES
45-02-005	Linden Alabama Facility	City of Linden	211 N Main St	Linden	AL	36748	YES
35-03-006	Stuttgart STP	City of Stuttgart	512 S. Main Street	Stuttgart	AR	72160	
44-04-007	Payson WWTF	Payson SD		Payson	AZ	85541	
45-04-008	Fountain Hills WWTF	Fountain Hills SD	16941 E Pepperwood Circle	Fountain Hil	AZ	85268	YES
** 25-04-009	Phoenix 91st Ave WWTP	Multi City WWT Authority	2301 W Durango	Phoenix	AZ	85009	YES
22-05-010	East Bay MUD WWTF	East Bay MUD	P.O. Box 24055	Oakland	CA	94623	
23-05-011	Central Contra Costa WWTF	Central Contra Costa SD	5019 Imhoff Place	Martinez	CA	94553	YES
35-05-012	Selma Community WWTF	Selma-Kingsburg-Fowler sd.	PO Box 95	Kingsburg	CA	93631	YES
25-05-013	San Jose Creek WRP	LACSD	1965 Workman Mill Road	Whittier	CA	90601	
25-05-014	Terminal Island WWTF	LA City Public Works		San Pedro	CA	90731	
35-05-015	Merced STP	City of Merced	1738 E. Alexander Avenue	Merced	CA	95340	
13-05-016	Sacto Reg WWTF	Sacramento Reg.CSD	8521 Laguna Station Rd	Elkgrove	CA	95624	YES
22-05-017	Chino Basin Reg TP #1	Chino Basin Municipal WD	P.O. Box 697	Rancho Cucamonga	CA	91730	
35-05-018	La Salina WWTF	City of Oceanside	320 North Horne Street	Oceanside	CA	92054	
45-05-019	Rainbow MWD Plant B-Id U3	Rainbow MWD Pala Mesa	4555 Highway 76	Fallbrook	CA	92028	YES
22-05-020	Southeast WWTF	City & County of San Francisco		San Francsico	CA	94102	
35-05-021	Manteca WWTF	City of Manteca	1001 W Center St	Manteca	CA	95336	YES
23-05-022	S Bayside WWTP	South Bayside System Authority	1400 Radio Road	Redwood City	CA	94065	YES
25-05-023	So SF-San Bruno WWTF	So San Fran Dept. Public Works	195 Belle Air Rd	S.San Fran	CA	94080	YES
15-05-024	San Jose/Santa Clara WPCP	City of San Jose	700 Los Esteros Road	San Jose	CA	95134	
25-05-025	Fairfield Suisun WWTF	City of Fairfield	PO Box 488	Suisun	CA	94585	YES
25-05-026	VSFCD WWTF & Reclamation	Vallejo San & FC District	450 Ryder St	Vallejo	CA	94590	YES
12-06-027	Metro Central Plant	Metropolitan Denver SDD #1	6450 York Street	Denver	CO	80229	
41-06-028	Left Hand STP	Left Hand W&SD	3091 N Lakeridge Trail	Boulder	CO	80302	YES
25-06-029	75th Street WWTP	Boulder Sewer Utility	PO Box 791 - Utilities Div	Boulder	CO	80306	YES
41-06-030	Black Hawk & Cen. City STP	Black Hawk & Cen. City SD		Black Hawk	CO	80422	
32-06-031	Wheatridge STP	Wheatridge SD		Wheat Ridge	CO	80033	
45-06-032	Leadville WWTP	Leadville SD		Leadville	CO	80461	
31-06-033	Steamboat Springs STP	Steamboat Springs DPW	PO Box 775088	Steamboat Sp	CO	80477	YES
35-07-034	Fairfield WPCF	Town of Fairfield	1 Rod Highway	Fairfield	CT	06430	YES
33-07-035	Norwalk WPCF	Town of Norwalk	297 West Avenue	Norwalk	CT	06850	
23-07-036	Stamford WPCF	City of Stamford	Harbor View Ave	Stamford	CT	06902	YES
32-07-037	Bristol STP	City of Bristol		Bristol	CT	06010	

** Nonrespondent

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
35-07-038	Rocky Hill WPCF	Metropolitan District	P O Box 800	Hartford	CT	06101	YES
35-07-039	Branford WPCF	Town of Branford		Branford Boro	CT	06405	
23-07-040	Waterbury WPCF	City of Waterbury	199 Municipal Road	Waterbury	CT	06708	YES
33-07-041	New London WPCF	City of New London	100 Trumbull Street	New London	CT		
45-07-042	Sprague WPCF	Town of Sprague	1 Main St	Baltic	CT	06330	YES
35-07-043	Putnam WPCF	Town of Putnam	126 Church Street	Putnam	CT	06260	
12-08-044	Blue Plains STP	DC Dept of Envir Services	5000 Overlook Ave SW	Washington	DC	20032	YES
32-09-045	N-O-T Reg STP	New Castle County DPW		Odessa	DE	19730	
42-09-046	Seaford STP	City of Seaford	P.O. Box 671	Seaford	DE	19973	
31-10-047	Gainesville Main St #2	City of Gainesville	PO Box 490	Gainesville	FL	32602	YES
35-10-048	Indian Harbor Beach STP	Brevard County Board of Comm.	150 Tomahawk Drive	Indian Harbor Beach	FL		
45-10-049	Davie STP	Davie Utilities	3591 NW 76th AVE.	Davie	FL	33314	
35-10-050	Sunrise STP No. 1	Broward Co. Utilities	4350 Springtree Drive	Sunrise	FL	33351	YES
23-10-051	Main Street Plant	City of Pensacola	401 West Government St	Pensacola	FL	32501	YES
32-10-052	Plant City STP	City of Plant City	705 North Alexandria Street	Plant City	FL	33566	
35-10-053	Ocala STP #2	Ocala DPU		Ocala	FL	32670	
32-10-054	Fernandina Beach WWTF	City of Fernandina Beach	1007 South 5th Street	Fernandina Beach	FL	32034	
32-10-055	Martin St Plant	City of Kissimmee	PO Box 1608	Kissimmee	FL	32741	
21-10-056	St Petersburg So West TP	City of St Petersburg	1635 3rd Ave North	St Petersbur	FL	33713	YES
35-10-057	Auburndale Wastewater TF	City of Auburndale	PO Box 186	Auburndale	FL	33823	YES
45-10-058	Mulberry STP	City of Mulberry	PO Box 707	Mulberry	FL	33860	YES
32-10-059	Sarasota WWTP	City of Sarasota	1850 12th Street	Sarasota	FL	34236	
25-10-060	Iron Bridge Road STP	City of Orlando	PO Box 1418	Oviedo	FL	32765	YES
35-11-061	Cartersville WPCP	City of Cartersville	PO Box 648	Cartersville	GA	30120	YES
45-11-062	Fitzgerald C.S. No. 3	Fitzgerald WLBC	200 N Hooker St	Fitzgerald	GA	31750	YES
35-11-063	Statesboro WPCP	City of Statesboro	P.O. Box 10	Statesboro	GA	30458	
45-11-064	Arlington Pond No. 1	City of Arlington	PO Box 126	Arlington	GA	31713	YES
41-11-065	Garden City WPCP	Town of Garden City	P O Box 7548	Garden City	GA	31408	YES
42-11-066	Northeast Clayton WPCP	Clayton County Water Authority		Rex	GA	30273	
** 41-11-067	Kennesaw STP	Cobb County Water And Sewer		Marietta	GA	30060	
41-11-068	Norman Park WPCP	Town of Norman Park		Norman Park	GA	31771	
41-11-069	Crawford Creek STP	Columbia County Board of Comm.		Augusta	GA	30907	
35-11-070	Gum Creek WPCP	City of Cordele		Cordele	GA	31015	
45-11-071	Flat Creek Pond	Town of Dawsonville		Dawsonville	GA	30534	
23-11-072	Snapfinger Cr STP	Dekalb County Water And Sewer	4124 Flakes Mill Rd	Decatur	GA	30034	YES
45-11-073	Claxton WPCP	City of Claxton		Claxton	GA	30417	
41-11-074	Blue Ridge STP No. 1	Town of Blue Ridge		Blue Ridge	GA	30513	

** Nonrespondent

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
35-11-075	Johns Creek WPCP	Fulton County Board of Commissioners	8100 River Birch Drive	Roswell	GA	30076	
23-11-076	R M Clayton WPCP	Atlanta DPW	2440 Bolton Rd	Atlanta	GA	30318	YES
45-11-077	Buford Westside CS	City of Buford	90 Scott St/City Hall	Buford	GA	30518	YES
35-11-078	Jackson Cr STP	Gwinnett County Water Pol.	75 Langly Drive	Lawrence	GA	30245	YES
** 45-11-079	Locust Grove East WPCP	Town of Locust Grove		Locust Grove	GA	30248	
31-11-080	Horse Creek WPCP	City of Warner Robins	P O Box 1488	Warner Robin	GA	31093	YES
35-11-081	Camilla WPCP	City of Camilla	PO Box 328	Camilla	GA	31730	YES
42-12-082	Waimanalo WWTF	Honolulu City And County	650 South King Street	Honolulu	HI	96813	
45-13-083	Vail Lagoon	Town of Vail	PO Box 128	Vail	IA	51465	YES
33-13-084	Dubuque WWTP	Dubuque Public Works	City Hall	Dubuque	IA	52001	YES
41-13-085	Worthington WWTP	Town of Worthington		Worthington	IA	52078	
45-13-086	Stanhope STL	City of Stanhope		Stanhope	IA	50246	
32-13-087	Ft Madison WWTP	City of Ft. Madison	Foot of 20th Street	Fort Madison	IA	52627	
23-13-088	Davenport WWTP	City of Davenport	P.O. Box 3606	Davenport	IA	52808	
45-13-089	Spillville WWTP	City of Spillville	PO Box 32	Spillville	IA	52168	YES
31-14-090	West Boise STP	City of Boise	11818 Joplin Rd	Boise	ID	83702	YES
41-14-091	Aberdeen S/T Facility	City of Aberdeen		Aberdeen	ID	83210	
45-14-092	Kootenai-Ponderay Lagoon	Kootenai-Ponderay W&SD	PO Box 1244	Sandpoint	ID	83864	YES
** 45-14-093	Conda Sewage Lagoon	City of Conda		Conda	ID	83230	
41-15-094	Capron STP	Village of Capron		Capron	IL	61012	
41-15-095	Tolono STP	Village of Tolono	Village Hall	Tolono	IL	61880	YES
11-15-096	Chicago MSD Northside STW	Chicago MSD	100 E Erie St	Chicago	IL	60611	YES
15-15-097	Chicago MSD W/SW STW	Chicago MSD	100 E Erie St	Chicago	IL	60611	YES
11-15-098	Chicago MSD-Calumet STW	Chicago MSD	100 East Erie Street	Chicago	IL	60611	
21-15-099	John E Egan WRP	Chicago MSD	100 E Erie St	Chicago	IL	60611	YES
41-15-100	Tuscola STW South	City of Tuscola	East Hillcrest Street	Tuscola	IL	61995	
31-15-101	Morris STP	City of Morris	222 Wanponsee St	Morris	IL	60450	YES
41-15-102	Hamilton STP	City of Hamilton	1010 Broadway	Hamilton	IL	62341	
41-15-103	Lake Zurich NW STP	City of Lake Zurich	61 W. Main Street	Lake Zurich	IL	60047	YES
24-15-104	NSSD-Clavey Rd, STP	North Shore SD	P.O. Box 750	Gurnee	IL	60031	
24-15-105	Waukegan STP	North Shore SD	P.O. Box 750	Gurnee	IL	60031	
41-15-106	Ashton Treatment System	City of Ashton		Ashton	IL	61006	
41-15-107	Algonquin WWTF	City of Algonquin		Algonquin	IL	60102	
31-15-108	Jacksonville STP	City of Jacksonville	200 W Douglas	Jacksonville	IL	62650	YES
41-15-109	Glasford STP	City of Glasford		Glasford	IL	61533	
21-15-110	Springfield SD E Sugar Creek	Springfield SD	3017 N. 8th RR. 12	Springfield	IL	62707	
31-15-111	Belleville STP #1	City of Belleville	101 S Illinois St	Belleville	IL	62220	YES

** Nonrespondent

	Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
	45-15-112	Mackinaw Sewage Trtmt. Plant	City of Mackinaw	Village Hall	Mackinaw	IL	61755	YES
	41-15-113	Norris City STP	City of Norris City		Norris City	IL	61553	
	45-15-114	Crainville STP	City of Crainville	Elles Avenue Extended	Carterville	IL	62918	
	31-16-115	Greensburg STP	City of Greensburg	950 S. Broadway	Greensburg	IN	47240	
	21-16-116	Muncie WWTP	Muncie Sanitary District	5002 Kilgore Ave	Muncie	IN	47304	YES
	31-16-117	Greenfield STP	City of Greenfield	809 S State St	Greenfield	IN	46140	YES
	41-16-118	Syracuse STP	City of Syracuse		Syracuse	IN	46567	
	25-16-119	Hammond WWTP	Hammond SD	5143 Columbia Ave	Hammond	IN	46327	YES
	45-16-120	Frankton WWTP	City of Frankton	105 Church Street	Frankton	IN	46044	YES
	32-16-121	Bloomington STP North	City of Bloomington	100 W. Dillman Road	Bloomington	IN	47401	
	32-16-122	Crawfordsville WWTP	City of Crawfordsville		Crawfordsville	IN	47933	
	41-16-123	Farmland WWTP	City of Farmland		Farmland	IN	47340	
	45-16-124	Union City STP	City of Union City	115 N Columbia St	Union City	IN	47390	YES
**	45-16-125	Batesville WWTP East	City of Batesville	132 South Main Street	Batesville	IN	47006	YES
	21-16-126	South Bend WWTP	South Bend Board of Public Works	3113 S. Riverside Drive	South Bend	IN	46228	
	31-16-127	Angola WWTP	City of Angola	202 W Gilmore St	Angola	IN	46703	YES
	25-16-128	Westside WWTP	City of Evansville	Civic Center Complex	Evansville	IN	47708	YES
	21-16-129	Terre Haute WWTP	Terre Haute SD	Rural Route 21, Box 860	Terre Haute	IN	47803	YES
	45-16-130	Reynolds STP	Reynolds	Town of Reynolds	Reynolds	IN	47980	YES
	45-17-131	Lebo WWTP	City of Lebo	PO Box 14	Lebo	KS	66856	YES
	41-17-132	Herington STP	City of Herington		Herington	KS	67449	
	33-17-133	Mission Township MSD #1	Johnson Co Unified SD	P.O. Box 39	Shawnee Mission	KS	66201	
	33-17-134	Turkey Creek MSD #1	Johnson Co Unified SD	P.O. Box 39	Shawnee Mission	KS	66201	
	22-17-135	Oakland WWTP	City of Topeka	1001 N E Poplar	Topeka	KS	66616	YES
**	41-17-136	KCK WWTP #12	City of Kansas City	701 N 7th St., Rm 421, Municipal Office	Kansas City	KS	66101	
	41-18-137	Lawrenceburg WTP	City of Lawrenceburg		Lawrenceburg	KY	40342	
	45-18-138	Walton STP	City of Walton	Stevenson Hill Road	Walton	KY	41094	
	41-18-139	Paris STP	City of Paris		Paris	KY	40361	
	31-18-140	Danville STP	Danville Water And Sewer	PO Box 670	Danville	KY	40422	YES
	45-18-141	Shepherdsville WWTP	City of Shepherdsville	1015 Beech Street	Shepherdsvil	KY	40165	YES
	25-18-142	Morris Forman WTP	Louisville & Jefferson Co	400 South Sixth Street	Louisville	KY	40202	
	31-18-143	Corbin STP	City of Corbin	901 S Main St	Corbin	KY	40701	YES
	35-18-144	Mount Sterling WTF	City of Mount Sterling		Mount Sterling	KY	40353	
	41-18-145	Central City STP	Central City Water Sewer Commission	Box 430	Central City	KY	42330	
	25-19-146	Central Treatment Plant	East Baton Rouge Parish	P.O. Box 1471	Baton Rouge	LA	70821	
	35-19-147	Bridge City Old Plant	Jeff Parish DD & S	1221 Elmwood Park Blvd., Suite 803	Harahan	LA	90123	
	31-19-148	Tallulah/Richmond STP	City of Tallulah	204 North Cedar st	Tallulah	LA	71282	YES

** Nonrespondent

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
35-19-149	Natchitoches STP	City of Natchitoches	PO Box 37	Natchitoches	LA	71457	YES
23-19-150	New Orleans East Bank	New Orleans ST WB	625 St. Joseph Street	New Orleans	LA	70165	
23-19-151	New Orleans W. Bank STP	New Orleans S&W Board	625 St. Joseph Street	New Orleans	LA	70165	
41-19-152	Dravo Treatment Plant	St Bernard SD 1		Chalmette	LA	70032	
41-19-153	Gueydan STP	City of Gueydan		Gueydan	LA	70542	
45-19-154	Dodson Lagoon	City of Dodson	PO Box 86	Dodson	LA	71422	YES
44-20-155	Lee WPCF	City of Lee		Lee	MA	01238	
24-20-156	Pittsfield Wastewater TP	City of Pittsfield	901 Holmes Rd	Pittsfield	MA	01201	YES
23-20-157	Fall River SCS & STP	City of Fall River	One Government Center	Fall River	MA	02720	YES
32-20-158	Mansfield Sewerage System	City of Mansfield		Mansfield	MA	02048	
34-20-159	N. Attleboro WWTF	Attleborough Board of Sewer	240 Smith Street	North Attleboro	MA	02760	
34-20-160	Haverhill WWTP	City of Haverhill	18 Ashford Street	Haverhill	MA	01830	
23-20-161	Chicopee WWTP	City of Chicopee	80 Medina St	Chicopee	MA	01013	YES
34-20-162	Easthampton STP	Easthampton Town of	43 Main Street, DPW Town Hall	Easthampton	MA	10127	
34-20-163	Ayer WWC & TF	City of Ayer	Brook Street	Ayer	MA	01432	
35-20-164	Billerica WWTP	City of Billerica	250 Boston Rd	Billerica	MA	01862	YES
42-20-165	Concord Sewerage System	Concord Dept of Public Works	133 Keyes Road	Concord	MA	01742	
34-20-166	Marlborough Easterly STP	City of Marlborough	860 Boston Post Road	Marlborough	MA	01752	
34-20-167	Charles River WPCF	Charles River PC District		Medway	MA	02053	
45-20-168	Medfield WWTF	City of Medfield	99 Bridge Street	Medfield	MA	02052	YES
24-20-169	Brockton WPCF	City of Brockton	Sewerage Dept. City Hall	Brockton	MA	02401	
44-20-170	Wareham WPCF	City of Wareham	Rt. 6, off Sandwich Road	Wareham	MA	02571	
44-20-171	Douglas WWTP	City of Douglas		Douglas /T/	MA	01516	
23-20-172	Fitchburg East WWTP	City of Fitchburg	718 Main St	Fitchburg	MA	01420	YES
44-20-173	Hopedale WWTP	City of Hopedale	Townhall	Hopedale	MA	01747	
34-20-174	Milford STP	City of Milford	PO Box 644	Milford	MA	01757	
44-20-175	North Brookfiled WWT/YWC Inc.	City of North Brookfield	P.O. Box 1020	Southbridge	MA	01550	
34-20-176	Templeton WWTF	City of Templeton		Baldwinsville	MA	01468	
23-20-177	Upper Blackstone Reg. WWTP	Upper Blackstone WPCD		Worcester	MA	01609	
44-20-178	Upton STP	City of Upton	87 West River Street	Upton	MA	01568	
44-20-179	Uxbridge WPCF	City of Uxbridge	River Road	Uxbridge	MA	01569	
12-21-180	Back River WWTP	City of Baltimore	8201 Eastern Boulevard	Baltimore	MD	21224	
23-21-181	Patapsco WW Trtmt. Plant	City of Baltimore	3501 Asiatic Ave	Baltimore	MD	21226	YES
42-21-182	Elkton WWTP	Mayor & Comm. of Elkton		Elkton	MD	21921	
41-21-183	Jefferson WWTP	Frederick Co Metro Comm		Jefferson SD	MD	21701	
32-21-184	Havre De Grace WWTP	Havre De Grace DPW	851 Revolutive Street	Hauve de Grace	MD	21078	
24-22-185	Lewiston-Auburn WWTP	Lewiston-Auburn WPCA		Lewiston	ME	04210	

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35-22-186	Livermore Falls WWTF	Town of Livermore Falls	2 Maine St	Livermore Fl	ME	04254	YES
22-22-187	Portland WD WTP	Portland Water District	P.O. Box 3553	Portland	ME	04104	
32-22-188	Prouts Neck WPCF	Scarborough SD		Scarborough	ME	04074	
32-22-189	South Portland STP #1	City of So Portland	111 Waterman Drive	S. Portland	ME	04106	YES
42-22-190	Yarmouth WWTP	City of Yarmouth		Yarmouth /T/	ME	04096	
44-22-191	Paris Utility District WPC	Paris Utility Dist		South Paris	ME	04281	
42-22-192	Old Town WWTF	Old Town City of		Old Town	ME	04468	
34-22-193	Hartland Treatment Plant	City of Hartland	P.O. Box 392	Hartland	ME	04943	
44-22-194	Berwick WPCF	Berwick Sewer District		Berwick Sew Dist	ME	03901	
42-22-195	Kittery WPCF	City of Kittery	P.O. Box 808	Kittery	ME	03904	
34-22-196	Sanford WWTF	Sanford Sewer District		Springvale	ME	04083	
35-23-197	Dowagiac STP	City of Dowagiac	203 Chestnut St	Dowagiac	MI	49047	YES
35-23-198	Iron Mt-Kingsford WWTP	Iron Mountain-Kingsford	PO Box 88 Park Drive	Kingsford	MI	49801	YES
35-23-199	Dist. 3 WWTP	Genesee County Drain Comm.	14412 Hogan	Linden	MI	48451	
23-23-200	Flint WPCF	City of Flint	G-4652 Beecher Road	Flint	MI	48502	
25-23-201	Ragnone (Dist.#2) WWTP	Genesee County Drain Comm.	G-9290 Farrand Road	Montrose	MI	48457	YES
41-23-202	Williamston WTP	City of Williamston	161 E. Grand River	Williamston	MI	48895	
21-23-203	Jackson WWTP	City of Jackson	161 West Michigan Avenue	Jackson	MI	49201	
21-23-204	Wyoming WWTP	Wyoming WWTP	3195 Wilson Avenue	Grandville	MI	49418	YES
41-23-205	Sheridan WWTP	City of Sheridan		Sheridan	MI	48884	
31-23-206	Whitehall STP-CS	Muskegon County	8301 White Rd	Muskegon	MI	49442	YES
35-23-207	Rochester STP	City of Rochester	400 6th Street	Rochester	MI	48063	
45-23-208	Merrill STP	City of Merrill	148 W Mahoney/Village Hall	Merrill	MI	48637	YES
23-23-209	Port Huron STP	City of Port Huron	100 Merchant St	Port Huron	MI	48060	YES
23-23-210	Ann Arbor WWTP	Ann Arbor PW	49 S Dixboro Rd	Ann Arbor	MI	48105	YES
33-23-211	Ypsi Community WWTP	Washtenaw County DPW	2777 State Street	Ypsilanti	MI	48197	
13-23-212	Detroit STP	Detroit Board of Water Com.	9300 West Jefferson	Detroit	MI	48209	YES
33-23-213	Trenton WWTP	City of Trenton	2800 Third Street	Trenton	MI	48183	
23-23-214	Wyandotte WWTP	Wayne County Road Commission	25717 Huron River Drive	Wyandotte	MI	48134	YES
41-24-215	Eagle Lake WWTP	City of Eagle Lake	PO Box 159	Eagle Lake	MN	56024	YES
23-24-216	Seneca Treatment Plant	Metropolitan Waste Control		Eagan Township	MN	55121	
45-24-217	Tyler WWTP	City of Tyler		Tyler	MN	56178	
45-24-218	Tracy STP	City of Tracy		Tracy	MN	56175	
31-24-219	Fairmont WWTF	City of Fairmont	114 E 1st St	Fairmont	MN	56031	YES
45-24-220	St Hillaire WWTP	City of St Hillaire	PO Box 296	St Hillaire	MN	56754	YES
13-24-221	Metropolitan TP	Metro Waste Control Commission	2400 Chilos Road	St. Paul	MN	55106	YES
45-24-222	Gibbon WWTP	City of Gibbon		Gibbon	MN	55335	

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41-24-223	Ely Waste Treatment Fac	City of Ely		Ely	MN	55731	
31-24-224	Hibbing WWTP-North	City of Hibbing	City Hall	Hibbing	MN	55746	YES
23-24-225	WLSSD Regional WWTF	W. Lake Superior Sanitation District	27th Avenue West and the Waterfront	Duluth	MN	55806	YES
25-25-226	St Joseph WWTP	City of St. Joseph	3500 759 Highway	St Joseph	MO	64504	YES
45-25-227	Hamilton WWTP-S.W.	City of Hamilton	200 S Davis	Hamilton	MO	64644	YES
33-25-228	Rock Creek WWTP	City of Independence	9600 Norledge	Independence	MO	64053	
** 45-25-229	Platte County Plant	City of Kansas City	5th Floor, City Hall	Kansas City	MO	64106	YES
41-25-230	Crocker WWTP	City of Crocker	PO Box 116	Crocker	MO	65452	YES
45-25-231	Emma N. WWTP	City of Emma	618 Main St	Concordia	MO	64020	YES
25-25-232	Coldwater Creek WWTP	St Louis MSD	13798 Old Halls Ferry Rd	Black Jack	MO	63034	YES
13-25-233	Lemay WWTP	St Louis MSD		Lemay	MO	63125	
21-25-234	Missouri River WWTP	St Louis MSD	2000 Hampton Ave	St Louis	MO	63139	YES
35-26-235	Corinth WWTP	City of Corinth	PO Box 352	Corinth	MS	38834	YES
35-26-236	West Biloxi STP	Harr. County WWMD	PO Box 2409	Gulfport	MS	39505	
45-26-237	Sunflower WWTP	City of Sunflower	PO Box 145	Sunflower	MS	38778	YES
35-27-238	Glendive WWTF	City of Glendive	P.O. Box 780	Glendive	MT	59330	
25-27-239	Billings WWTP	City of Billings	P.O. Box 30958	Billings	MT	59111	
35-28-240	Lake Hickory WWTP	City of Hickory		Hickory City	NC	28601	
45-28-241	No. 3 School	Cleveland County		Cleveland County	NC	28150	
35-28-242	Whiteville WWTP	City of Whiteville	PO Box 592	Whiteville	NC	28472	YES
35-28-243	Swearing Cr. WTP #1	City of Lexington		Lexington City	NC	27292	
23-28-244	Rocky Mount WWTP	City of Rocky Mount	PO Box 1180	Rocky Mount	NC	27801	YES
31-28-245	Mason Farm WTP	Orange Water and Sewer Authority	PO Box 366	Carrboro	NC	27510	YES
45-28-246	Creswell STP	City of Creswell	PO Box 115	Creswell	NC	27928	YES
45-29-247	Karlsruhe Lagoon	City of Karlsruhe		Karlsruhe	ND	58744	
45-29-248	Wishek Lagoon	City of Wishek	PO Box 306	Wishek	ND	58495	YES
32-30-249	Kearney WWTP	City of Kearney	P.O. Box 489	Kearney	NE	68847	
41-30-250	Eustis WWTP	City of Eustis		Eustis	NE	69028	
32-30-251	Beatrice WWTP	City of Beatrice	P.O. Box 279	Beatrice	NE	68310	
41-30-252	Burwell WWTP	City of Burwell	404 Grand Avenue	Burwell	NE	68823	YES
45-30-253	Fullerton WWTP	City of Fullerton	511 5th St	Fullerton	NE	68638	YES
41-30-254	Table Rock WWTP	City of Table Rock		Table Rock	NE	68447	
32-31-255	Keene WWTP	City of Keene	580 Main Street	Keene	NH	03431	
32-31-256	Merrimack WWTP	Merrimack Board of Select	P.O. Box 235	Merrimack	NH	03054	
34-31-257	Milford WWTF	Milford Board of Select	Milford Town Hall	Milford	NH	03055	
34-31-258	Franklin STP	NH Water Supply & Pollution		Franklin	NH	03235	
34-31-259	Somersworth WWTP	City of Somersworth	157 Main Street	Somersworth	NH	03878	

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26-32-260	Bergen Co UA Sewer System	Bergen County Utility Authority	P.O. Box 122	Little Ferry	NJ	07643	
35-32-261	Cinnaminson STP	Cinnaminson Sewerage Authority	1621 Riverton Rd	Cinnaminson	NJ	08077	YES
42-32-262	Cape May Reg STP	Cape May County MUA	Cape May Courthouse,Co Bd of Freeholder	Cape May	NJ	08210	
16-32-263	Passaic Valley Treat Plant	Passaic Valley Sewerage	600 Wilson Ave	Newark	NJ	07105	YES
25-32-264	Gloucester County Region	Gloucester Co U.A.	P.O. Box 1339	Blackwood	NJ	08012	
35-32-265	E Windsor MUA WWTP	Upper Millstone RSA	7 Wiltshire Drive	East Windsor	NJ	08520	
26-32-266	Middlesex County SA STP	Middlesex County SA	P.O. Box 461	Sayreville	NJ	08872	
26-32-267	Rahway Valley STP	Rahway Valley SA	1050 East Hazelwood Avenue	Rahway	NJ	07065	
32-32-268	Middletown Main STP	Township of Middletown SA	PO Box 205	Belford	NJ	07718	YES
** 45-32-269	River Gardens STP	Aberdeen Twp MUA	30 Noble Place	Aberdeen	NJ	07747	YES
33-32-270	Parsippany-Troy Hills TP	Township of Parsippany Tr		Parsippany	NJ	07054	
35-32-271	Southern WPCF	Ocean County Sewerage Authority	Cedar Run Dock Road	West Creek	NJ	08092	YES
23-32-272	Somerset-Raritan STP	Somerset-Raritan Valley SA		Bridgewater Twp	NJ	08876	
26-32-273	JT Meet Treatment Plant	J M of Essex & Union	500 S First St	Elizabeth	NJ	07202	YES
45-32-274	Oxford Wastewater Facility	Warren County Pequest Riv.	PO Box 159	Bellvedere	NJ	07823	YES
35-33-275	Gallup STP	City of Gallup	PO Box 1270	Gallup	NM	87305	YES
33-34-276	Douglas Co SID #1 WWTF	Douglas County SID #1		Zephyr Cove	NV	89448	
35-35-277	Bethlehem SD	City of Bethlehem		Cedar Hill	NY	12054	
42-35-278	Nott Road Plant	City of Guilderland	State Farm Road	Guilderland	NY	12084	
23-35-279	South Albany STP	Albany County Sewer District	P.O. Box 4187	Albany	NY	12204	
16-35-280	Hunts Point WPCP	NYC DEP	Coster St and Ryawa Ave	New York	NY	10474	YES
32-35-281	Endicott STP	City of Endicott	Village of Endicott Main St., 17C	Endicott	NY	13760	
33-35-282	Dunkirk STP	City of Dunkirk	Wright Park Drive	Dunkirk	NY	14048	
33-35-283	Beacon WPCP	City of Beacon	427 Main Street	Beacon	NY	12508	
42-35-284	Alden STP	City of Alden	13336 Broadway	Alden	NY	14004	
35-35-285	Big Sister Cr. STP	Erie County	8443 Lakeshore Rd	Angola	NY	14006	YES
26-35-286	26th Ward WPCP	NYC DEP	Bureau of Wastewater Treatment Wards Is	New York	NY	10035	
23-35-287	NW Quadrant TP	NW Quadrant PWB	170 Payne Beach Rd	Hilton	NY	14468	YES
26-35-288	Bay Park WPC Plant	Nassau County DPW	P.O. Box 148	East Rockaway	NY	11518	
36-35-289	Belgrave WPC Facility	Belgrave WPCD	P.O. Box 408	Great Neck	NY	11022	
26-35-290	Cedar Creek WPC Plant	Nassau County DPW	P.O. Box 88	Wantagh	NY	11793	
33-35-291	Glen Cove STP	Glen Cove DPW	100 Morris Avenue	Glen Cove	NY	11542	
36-35-292	Inwood STP	Nassau County DPW		Inwood	NY	11501	
36-35-293	Long Beach WPC Plant	Long Beach DPW	1 West Chester Street	Long Beach	NY	11561	
33-35-294	Port Washington STP	Port Washington WPCD	P.O. Box 790	Port Washington	NY	11050	
46-35-295	West Long Beach STP	West Longbeach Sewer District	2150 Bay Boulevard	Atlantic Beach	NY	11509	
16-35-296	Wards Island WPCP	NYC DEP	Wards Island	New York	NY	10035	YES

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25-35-297	Metro Syracuse STP Serv A	Onondaga County DOS	650 W Hiawatha Blvd	Syracuse	NY	13204	YES
33-35-298	New Windsor STP	City of Windsor		Newburgh /City/	NY	12550	
45-35-299	Brewster STP	NYC DEP	Box D, Jay St	Katonah	NY	10536	YES
16-35-300	Bowery Bay WPCP	NYC DEP	4301 Berrian Boulevard	New York	NY	11102	YES
26-35-301	Jamaica WPCP	NYC DEP	Bureau of Wastewater Treatment Wards Is	New York	NY	10035	
26-35-302	Rockaway WPCP	NYC DEP	Bureau of Wastewater Treatment Wards Is	New York	NY	10035	
33-35-303	Orangetown DPW	Town of Orangetown	Route 303	Orangeburg	NY	10962	
43-35-304	Saratoga County SD#1 WPCP	Saratoga County SD #1		Half Moon	NY	12020	
26-35-305	Port Richmond WPCP	NYC DEP	Bureau of Wastewater Treatment Wards Is	New York	NY	10035	
35-35-306	Cayuga Heights STP	City of Cayuga Heights	836 Hanshaw Rd	Ithaca	NY	14850	YES
35-35-307	New Paltz STP	City of New Paltz	25 Plattekill Ave	New Paltz	NY	12561	
33-35-308	Port Chester SD STP	Westchester Co DEF	110 Willett Avenue	Port Chester	NY	10573	
26-35-309	Yonkers Joint STP	Westchester County DEF		Yonkers	NY	10705	
35-36-310	Delphos STP	City of Delphos	Town Hall	Delphos	OH	45833	YES
35-36-311	St. Mary's STP	St Marys Waste Treatment	101 E. Spring Street	St. Mary's	OH	45885	
41-36-312	Guilford Lake S.D. STP	Columbiana County	PO Box 423	Libson	OH	44432	YES
15-36-313	Easterly WWTP	NEORSD	3826 Euclid Avenue	Cleveland	OH	44115	
23-36-314	Euclid WWTP	City of Euclid	22201 Lakeshore Blvd	Euclid	OH	44123	YES
35-36-315	North Olmstead WWTP	City of North Olmsted	5206 Dover Center Rd	N. Olmstead	OH	44070	YES
41-36-316	North Royalton WWTP	City of North Royalton	13834 Ridge Rd	N. Royalton	OH	44133	YES
13-36-317	Southerly WWTP	NE Ohio RSO	6000 Canal Rd	Cuyahoga Hgt	OH	44125	YES
35-36-318	Sandusky WPCF	City of Sandusky	220 Meigs St	Sandusky	OH	44870	YES
13-36-319	Mill Creek WWTP	Cincinnati Metro SD	1600 Gest St	Cincinnati	OH	45204	YES
33-36-320	Muddy Creek WWTP	Cincinnati Metro SD	1600 Gest Street	Cincinnati	OH	45204	
45-36-321	Deshler STP	City of Deshler	101 E. Main Street	Deshler	OH	43516	
** 35-36-322	Ironton STP	Ironton City of	PO Box 704	Ironton	OH	45638	YES
41-36-323	Fullers Creekside Est.	Lucas County	1111 South McCord Road	Holland	OH	43528	
41-36-324	Plain City WTP	Village of Plain City	213 S. Chillicothe Street	Plain City	OH	43064	
33-36-325	Meander Creek STP	Malihoning City Board	Mineral Ridge Coll. System	Mineral Ridge	OH	44440	
45-36-326	West Carrollton STP	City of West Carrollton	601 West Central Ave	W Carrollton	OH	45449	YES
41-36-327	Mt. Gilead WWTP	City of Mt. Gilead	72 W. High St	Mt Gilead	OH	43338	YES
31-36-328	Port Clinton STP	City of Port Clinton	N. Jackson St	Port Clinton	OH	43452	YES
45-36-329	Thornville STP	City of Thornville	Board of Public Affairs	Thornville	OH	43706	YES
41-36-330	Twin Lakes WWTP	Portage County	PO Box 390	Ravenna	OH	44266	YES
41-36-331	Windham WWTP	City of Windham		Windham	OH	44288	
45-36-332	Mill Creek Subdivision STP	Shelby County Board		Shelby	OH	45365	
23-36-333	Canton Wastewater Plant	City of Canton	3530 Central Avenue	Canton	OH	44702	

** Nonrespondent

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25-36-334	Massillon STP	City of Massillon	2695 Erie St S	Massillon	OH	44646	YES
45-36-335	Brentwood Estates STP #24	Summit County	25 N Main St	Akron	OH	44308	YES
45-36-336	Hudson STP	City of Hudson	27 E Main St	Hudson	OH	44236	YES
41-36-337	Mason STP	City of Mason	202 W. Main Street	Mason	OH	45040	
41-37-338	Stringtown STP	Stringtown Public Works Authority		Stringtown	OK	74569	
** 45-37-339	Depew Lagoon	City of Depew	PO Box 357	Depew	OK	74028	YES
45-37-340	Holdenville South STP	City of Holdenville	Box 789	Holdenville	OK	74848	YES
35-37-341	Blackwell STP	City of Blackwell	PO Box 350	Blackwell	OK	74631	YES
45-38-342	Sandy STP	City of Sandy	P.O. Box 116	Sandy	OR	97055	
35-38-343	Tryon Creek STP	City of Portland	195 Foothills Road	Lake Oswego	OR	97034	YES
41-38-344	Scappoose STP	City of Scappoose		Scappoose	OR	97056	
25-38-345	St Helens STP	City of St Helens	PO Box 278	St Helens	OR	97051	YES
41-38-346	Cave Junction STP	City of Cave Junction		Cave Junction	OR	97523	
35-38-347	Lebanon Sewage Treat Plant	City of Lebanon	33110 Tennessee Rd	Lebanon	OR	97355	YES
35-38-348	Stayton STP	City of Stayton	362 N 3rd Ave	Stayton	OR	97383	YES
22-38-349	Columbia Blvd. STP	City of Portland	5001 N. Columbia Blvd.	Portland	OR	97203	YES
41-39-350	Ortanna Twp Sewage System	Board of Hamiltonban Twp		Orrtanna	PA	17325	
13-39-351	Alcosan WWTP	Allegheny County Sanitary Authority	3300 Preble Ave	Pittsburgh	PA	15233	YES
35-39-352	Upper Allegheny JSA STP	Upper Allegheny Joint SA	320 4th Avenue	Tarentum	PA	15084	
33-39-353	Kiski Valley WPCA	Kiski Valley WPCA	1200 Pine Run Rd	Leechburg	PA	15656	YES
41-39-354	Amity Township STP	Amity Township Municipal Authority		Douglassville	PA	19502	
41-39-355	Milford Trumbauersville	Milford Trumbauersville		Milford Twp	PA	18970	
31-39-356	Downingtown Regional WPCC	Downingtown Area Regional Authority	PO Box 45	Downingtown	PA	19335	YES
41-39-357	Carlisle Suburban STP	Carlisle Suburban Authority	240 Clearwater Drive	Carlisle	PA	17013-1185	
31-39-358	Middletown WPCP	Middletown Borough Authority	Catherine & Emaus Streets	Middletown	PA	17057	
45-39-359	Girard STP	Girard Borough	34 Main Street West	Girard	PA	16417	YES
45-39-360	Brockway Boro STP	Brockway Boro Municipal Authority	501 Main St	Brockway	PA	15824	YES
41-39-361	Moosic WWTP	Lackawanna River Basin SA		Moosic	PA	18507	
22-39-362	Scranton Sewer Authority	Scranton Sewer Authority	307 N. Washington Avenue	Scranton	PA	18503	
21-39-363	City of Allentown WWTP	Allentown Authority	112 Union Street	Allentown	PA	18101	
33-39-364	Greater Hazelton JSA STP	Greater Hazelton JSA	P.O. Box 651	Hazelton	PA	18201	
35-39-365	Upper Shenango Valley STP	Upper Shenango Val WPCA	155 West Connelly Blvd	Sharon	PA	16146	YES
45-39-366	Burnham STP	Burnham Boro Municipal Authority	200 First Ave	Burnham	PA	17009	YES
33-39-367	E Norriton Plymouth TP	Norriton-Plymouth JS Authority	200 Ross Street	Norristown	PA	19401	
33-39-368	Upper Moreland-Hatboro TP	Upper Moreland-Hatboro SA	P.O. Box 535	Willowgrove	PA	19090	
12-39-369	Northeast WPC Plant	Philadelphia WPC Division	3900 Richmond Street	Philadelphia	PA	19137	YES
12-39-370	Southeast WPC Plant	Philadelphia WPC Division	1101 Market St 5th Fl ARATOW	Philadelphia	PA	19107	YES

** Nonrespondent

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
12-39-371	Southwest WPC	Philadelphia WPC Division	1101 Market St 5th Fl ARATOW	Philadelphia	PA	19107	YES
** 45-39-372	Kreamer STP	Kreamer Municipal Authority		Kreamer	PA	17842	
45-39-373	Garrett Boro WWTF	Garrett Boro Municipal Authority	PO Box 218	Garrett	PA	15542	
41-39-374	Ligonier STP	Ligonier Municipal Authority		Ligonier Boro	PA	15658	
** 41-39-375	New Freedom Wtp	New Freedom Borough Authority	150 E. Main Street	New Freedom	PA	17349	
32-39-376	Springettsbury Twp STP	Springettsbury Twp. SA	3501 North Sherman Street	York	PA	17402	
23-39-377	York Water Poll. Cont. Center	York City Sewer Authority	P.O. Box 509	York	PA	17403	
44-40-378	East Greenwich STP	East Greenwich DPW		East Greenwich /T/	RI	02818	
42-40-379	Jamestown Sewage System	City of Jamestown		Jamestown /t/	RI	02835	
44-40-380	New Shoreham WPCF	New Shoreham Sewer Commission		New Shoreham /t/	RI	02807	
24-40-381	Bucklin Pt STP	Blackstone Valley Sewer District	102 Campbell Ave	E Providence	RI	02196	YES
23-40-382	Cranston WPCF	Cranston DPW	140 Pettaconsett Avenue	Cranston	RI	02920	
34-40-383	Westerly WPCF	City of Westerly		Westerly /T/	RI	02891	
35-41-384	Isabela Sanitary System	Puerto Rico Aqueduct & SA		Isabela	RQ	00662	
25-42-385	Elgin Street WWTP	N. Charleston Sewer District	1000 Herbert Street	Charleston	SC	29405	
23-42-386	Plum Island Trtmt. Plant	City of Charleston		Charleston	SC	29401	
** 45-42-387	Swift Creek Trtmt. Plant	City of Darlington	PO Box 11	Darlington	SC	29532	YES
35-42-388	Florence STP #1	Florence Utilities Division	Drawer EE, City Complex	Florence	SC	29501	YES
35-42-389	Wade Hampton Plant	WCRSA	PO Box 5242 Sta B	Greenville	SC	29606	YES
45-42-390	Ridgeland Sewer System	City of Ridgeland		Ridgeland	SC	29936	
31-42-391	Lyman Waste Trtmt. Plant	City of Lyman		Lyman	SC	29365	
45-42-392	Fort Mill WWTP	City of Ft. Mill	PO Box 159	Fort Mill	SC	29715	YES
35-43-393	Brookings WWT Facility	Brookings Municipal Utilities	525 Western Ave	Brookings	SD	57006	YES
21-43-394	Sioux Falls WWT Facility	City of Sioux Falls	Water Reclarnation, 4300 N Glenwood Rd.	Sioux Falls	SD	57104	YES
33-44-395	Maryville Regional STP	Maryville Board of Utilities		Maryville	TN	37801	
33-44-396	Newport WWTP	Newport Utilities Board		Newport	TN	37821	
35-44-397	Tullahoma Municipal WWTS	City of Tullahoma		Newbern	TN	37388	
45-44-398	Signal Mountain STP	City of Signal Mountain	1100 Ridgeway Ave/City Hall	Signal Mount	TN	37377	YES
25-44-399	Third Creek WWTP	Knoxville WWCS	2015 Neyland Dr	Knoxville	TN	37916	YES
25-44-400	Memphis E. Maxson WWTP	City of Memphis	125 N. Main St	Memphis	TN	38109	YES
15-45-401	Wells Creek STP	City of Palestine	PO Drawer Z	Palestine	TX	75801	YES
31-45-402	Andrews STP	City of Andrews	111 Lodgston	Andrews	TX	79714	YES
45-45-403	Clifton STP	City of Clifton		Clifton	TX	76634	
31-45-404	Central STP	City of Freeport	128 E. Fourth St.	Freeport	TX	77541	YES
35-45-405	Still Creek STP	City of Bryan		Bryan	TX	77801	
24-45-406	Central STP	City of Trinity Ra	P.O. Box 531196	Grand Prairie	TX	75053	
15-45-407	Central STP	City of Dallas	1020 Sargent Road	Dallas	TX	75216	

** Nonrespondent

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
45-45-408	Ponder STP	City of Ponder		Ponder	TX	76259	
45-45-409	San Diego STP	Duval County CRD		San Diego	TX	78384	
22-45-410	Haskell St. STP	City of El Paso	PO Box 511	El Paso	TX	79999	YES
41-45-411	Pecan Grove STP	Pecan Grove MUD	ECO Resources, 12550 Emily Court	Sugarland	TX	77478	
42-45-412	Fredericksburg STP	City of Fredericksburg		Fredericksburg	TX	78624	
41-45-413	Nixon STP	City of Nixon	100 West 3rd Street	Nixon	TX	78140	
45-45-414	Navasota STP	City of Navasota	PO Box 910	Navasota	TX	77868	YES
45-45-415	Gruver STP	City of Gruver	PO Box 947	Gruver	TX	79040	YES
41-45-416	North STP	City of Silsbee	105 South Third St	Silsbee	TX	77656	YES
22-45-417	Almeda Sims STP	City of Houston	198 Hirsch Rd	Houston	TX	77020	YES
25-45-418	Southwest STP	City of Houston	P.O. Box 1562	Houston	TX	77001	
31-45-419	South STP	City of Humble	PO Box 1627	Humble	TX	77338	YES
35-45-420	Alief Regional STP	Gulf Coast WDA		Houston	TX	77058	
35-45-421	Parkglen STP	City of Houston	P.O. Box 1562	Houston	TX	77001	
45-45-422	Westheimer Road STP	Westheimer Road MUD	198 Hirsch Rd	Houston	TX	77020	YES
45-45-423	East Cedar Creek Fresh Water Supply Dis	East Cedar Creek FWSD	PO Box 309	Mabank	TX	75147	
41-45-424	China STP	City of China		China	TX	77613	
41-45-425	North STP	City of Port Arthur		Port Arthur	TX	77640	
35-45-426	Bay City STP	City of Bay City	1217 Avenue J	Bay City	TX	77414	YES
25-45-427	Waco Regional STP	Brazos River Authority	PO Box 7555	Waco	TX	76710	YES
41-45-428	Cameron STP	City of Cameron		Cameron	TX	76520	
31-45-429	Jackson Street STP	City of Orange	PO Box 520	Orange	TX	77630	YES
15-45-430	Southside STP	City of Tyler	PO Box 2039	Tyler	TX	75701	YES
15-45-431	Village Creek STP	City of Fort Worth	PO Box 870	Fort Worth	TX	76101	YES
25-45-432	Abilene STP	City of Abilene	PO Box 60	Abilene	TX	76621	YES
41-45-433	Northeast STP	City of Mount Pleasant	P.O. Box 1421	Mount Pleasant	TX	75455	
35-45-434	San Felipe STP	City of Del Rio	PO Box 1469	Del Rio	TX	78840	YES
** 21-46-435	Granger-Hunter STP	Granger-Hunter Imp. District		Salt Lake City	UT	84111	
25-46-436	SLC Reclamation Plant	Salt Lake City	1530 SW Temple St	Salt Lake Cy	UT	84115	YES
24-46-437	So Valley Water Rec. Facility	So Valley Water Rec. Board	P.O. Box 277	Midvale	UT	84047	
24-46-438	Central Weber WWTP	Central Weber SID		Ogden	UT	84401	
41-47-439	Mt. Sidney Ft Defiance ST	Augusta County Service Authority	PO Box 2448	Staunton	VA	24401	YES
25-47-440	Northside/Southside STP	City of Danville	460 Williamson Rd	Danville	VA	24540	YES
** 31-47-441	Fredericksburg STP	City of Fredericksburg	PO Box 7447	Fredericksbg	VA	22494	YES
25-47-442	Lynchburg STP	City of Lynchburg		Lynchburg	VA	24505	
23-47-443	Boat Harbor WPCF	Hampton Roads Sanitary District	P.O. Box 5000	Virginia Beach	VA	23455	

** Nonrespondent

Survey ID#	POTW Name	Authority Name	POTW Street	POTW City	State	Zip Code	Analytic
32-47-445	Water Reclamation Project	Upper Occoquan Sewer Authority		Manassas Park	VA	22110	
32-47-446	Nansemond WPCF	Hampton Roads Sanitary District	P.O. Box 5000	Virginia Beach	VA	23455	
23-47-447	Chesapeake-Elizabeth WPCF	Hampton Roads Sanitary District	5332 Shore Drive	VA Beach	VA	23455	YES
32-47-448	York River WPCF	Hampton Roads Sanitary District		Seaford	VA	23696	
41-48-449	Lyndon STP	City of Lyndon		Lyndon /T/	VT	05849	
41-48-450	Newport WPCF	Newport City	74 Main Street	Newport	VT	05855	
45-48-451	Quechee WPC	Hartford	15 Bridge St, White River Ju	Hartford	VT	05001	YES
45-48-452	Taftsville STP	City of Woodstock	Town Hall, 29 The Green	Woodstock	VT	05091	YES
23-49-453	Vancouver Westside STP	Vancouver DPW	1800 Del Monte Way	Vancouver	WA	98660	
25-49-454	Renton WWTP	Municipality of Metro Seattle	1200 Monstor	Renton	WA	98055	YES
12-49-455	West Point WWTP	Municipality of Metro Seattle	821 2nd Avenue	Seattle	WA	98104	YES
41-49-456	Sumas S/T Facility	City of Sumas		Sumas	WA	98295	
45-49-457	Mabton STP	City of Mabton		Mabton	WA	98935	
41-50-458	Adams WWTP	Adams Water & Sewer Utilities		Friendship	WI	53910	
23-50-459	Green Bay MSD WWTP	Green Bay MSD	P.O. Box 19015	Green Bay	WI	54307-9015	
** 41-50-460	Stockbridge STP	Stock Bridge Sanitary District		Stockidge	WI	53088	
42-50-461	Portage WWTP	Portage Wastewater Treatment	115 W. Pleasant Street	Portage	WI	53901	
41-50-462	Wis Dells-Lake Delton STP	Wis. Dells-Lake Delton		Wisconsin Dells	WI	53965	
45-50-463	Wabeno SD #1 Lagoons	Wabeno San Dist No. 1	4904 McGraw Ave	Wabeno	WI	54566	YES
41-50-464	Kieler SD #1 STP	Kieler S. D. No. 1		Kieler	WI	53812	
41-50-465	Johnson Creek WWTP	City of Johnson Creek	P.O. Box 238	Johnson Creek	WI	53038	
35-50-466	Merrill STP	Merrill Sewage Utility		Merrill	WI	54452	
12-50-467	Jones Island Sewage Treatment	Milwaukee MSD	260 West Seeboth Street	Milwaukee	WI	53204	
21-50-468	Janesville WWTP	City of Janesville	123 E. Delavan Drive	Janesville	WI	53545	
45-50-469	Gresham WWTP	Gresham Water & Sewer Utilities		Gresham	WI	54128	
41-50-470	Lake Geneva WWTP	City of Lake Geneva	PO Box 740	Lake Geneva	WI	53147	YES
33-50-471	Brookfield STP	Brookfield Sewer Utility		Brookfield /C/	WI	53005	
25-50-472	Waukesha STP	City of Waukesha	201 Delafield St	Waukesha	WI	53186	YES
41-50-473	Winneconne WWTP	City of Winneconne		Winneconne /T/	WI	54986	
45-50-474	Vesper Lagoons	City of Vesper	502 S Hemlock	Vesper	WI	54489	YES
35-51-475	Weirton WWT Facility	Weirton San Board	5000 Freedom Way	Weirton	WV	26062	YES
35-51-476	Greenbrier PSD No. 2 STP	Greenbrier County PSD No. 2	PO Box 673	Rainell	WV	25962	YES
35-51-477	Wheeling WPC Fac	Wheeling Sanitary Board	PO Box 6348	Wheeling	WV	26003	YES
41-51-478	Marlinton STP	City of Marlinton	709 2nd Avenue	Marlinton	WV	24954	
31-52-479	Rock Springs STP	City of Rock Springs		Rock Springs	WY	82901	

** Nonrespondent

APPENDIX C

DATABASE FILE CONTENTS

APPENDIX C

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

MEMBER NAME	SECTION	DESCRIPTION	QUESTION NO.	RECORD LENGTH	# VARIABLES	OBS
S0101	I	GENERAL POTW INFORMATION	1 - 3(E)	305	19	462
S0102	I	GENERAL POTW INFORMATION	3(F) - 9	142	19	462
S0103	I	GENERAL POTW INFORMATION	10(1 - 18)	248	58	462
S0104	I	GENERAL POTW INFORMATION	10(19 - 36)	247	60	462
S0105	I	GENERAL POTW INFORMATION	11 - 20	231	67	462
S0106	I	GENERAL POTW INFORMATION	21	703	43	462
S0107	I	GENERAL POTW INFORMATION	22 - 30	278	79	462
S0108	I	GENERAL POTW INFORMATION	31	237	96	462
S0109	I	GENERAL POTW INFORMATION	32(1 - 14)	238	102	462
S0110	I	GENERAL POTW INFORMATION	32(15 - 28)	252	102	462
S0111	I	GENERAL POTW INFORMATION	33 - 36	162	28	462
S0201	II	LAND APPLICATION	1 - 14	278	94	462
S0202	II*	INDIVIDUAL LAND APPLICATION INFO	15 - 31	304	85	519
S0301	III	DISTRIBUTION & MARKETING	1 - 15	315	109	462
S0401	IV	INCINERATION	1 - 10	198	66	462
S0402	IV*	INDIVIDUAL INCINERATOR INFO.	11 - 26	420	117	514
S0501	V	MONOFILL	1 - 11	188	68	462
S0502	V*	INDIVIDUAL MONOFILL INFO.	12 - 22	145	51	462
S0601	VI	CO-DISPOSAL LANDFILL	1 - 9	117	43	462
S0602	VI*	INDIVIDUAL CO-DISPOSAL LANDFILL	10 - 21	175	53	475
S0701	VII	OCEAN DISPOSAL	1 - 9	362	29	462
S0702	VII	OCEAN DISPOSAL	10 - 19	483	79	462

* Multiple records for more than one copies of Part B completed.

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0101

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VARIABLE TYPE   LENGTH POSITION      LABEL
AQ1A     CHAR      40       17       POTW NAME
AQ1B     CHAR       9       57       NPDES PERMIT NUMBER
AQ1C     CHAR      30       66       ADDRESS OF POTW
AQ1D     CHAR      20       96       CITY, TOWN, VILLAGE
AQ1E     CHAR      15      116       COUNTY
AQ1F     CHAR       2      131       STATE
AQ1G     CHAR      10      133       ZIP CODE
AQ2A     CHAR      40      143       MAILING ADDRESS
AQ2B     CHAR      20      183       MAILING ADDRESS(CITY,TOWN,VILLAGE)
AQ2C     CHAR       2      203       MAILING ADDRESS(STATE)
AQ2D     CHAR      10      205       MAILING ADDRESS(ZIP CODE)
AQ3A     CHAR      20      215       CONTACT PERSON
AQ3B     CHAR      15      235       JOB TITLE
AQ3C1    CHAR      20      250       TELEPHONE NUMBER
AQ3C2    CHAR       4      270       BEST TIME TO CALL
AQ3D     CHAR      20      274       ALTERNATE CONTACT PERSON
AQ3E     CHAR      15      294       JOB TITLE
EPISODE  CHAR       4       13       EPA EPISODE NUMBER
SURVEYID CHAR       9        4       SURVEY ID NUMBER
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                         CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

                                    CONTENTS OF SAS MEMBER INDATA.S0102


VARIABLE TYPE   LENGTH POSITION     LABEL
AQ3F1    CHAR       20       19     TELEPHONE NUMBER
AQ3F2    CHAR        4       39     BEST TIME TO CALL
AQ4      NUM         8       43     POPULATION SERVED BY POTW
AQ5      NUM         8       51     ESTIMATED HOUSEHOLDS SERVED BY POTW
AQ6A     NUM         8       59     # OF INDUSTRIAL DISCHARGERS
AQ6B     NUM         8       67     # OF NON-DOMESTIC DISCHARGERS
AQ6C     NUM         8       75     TOTAL ESTABLISHMENTS
AQ7      CHAR        1       83     COMBINE SANITARY WASTEWATER & STORMWATER
AQ8      NUM         8       84     STORM WATER TREATMENT
AQ9A     NUM         8       92     DAILY DESIGN FLOW (ANNUAL AVERAGE)
AQ9B     NUM         8      100     DAILY TOTAL FLOW (ANNUAL AVERAGE)
AQ9B1    NUM         8      108     DAILY DOMESTIC FLOW (ANNUAL AVERAGE)
AQ9B2    NUM         8      116     DAILY INDUSTRIAL & OTHER FLOW (ANN.AVG.)
AQ9B3    NUM         8      124     DAILY INFILTRATION FLOW (ANNUAL AVG)
AQ9B4    NUM         8      132     DAILY OTHER FLOW (ANNUAL AVG)
AQ9B4OTH CHAR       15      140     DAILY OTHER FLOW (SPECIFY NAME)
EPISODE  CHAR        4       15     EPA EPISODE NUMBER
ST       CHAR        2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0103

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VARIABLE TYPE  LENGTH POSITION     LABEL
AQ10     CHAR     1      19        INDUSTRIAL DISCHARGE
AQ10B011 CHAR     1      20        ADHESIVES AND SEALANTS MANUFACTURING
AQ10B012 NUM      8      21        NUMBER OF ESTABLISHMENTS
AQ10B013 NUM      8      29        AVERAGE DAILY FLOW (MGD)
AQ10B021 CHAR     1      37        ALUMINUM FORMING
AQ10B022 NUM      8      38        NUMBER OF ESTABLISHMENTS
AQ10B023 NUM      8      46        AVERAGE DAILY FLOW (MGD)
AQ10B031 CHAR     1      54        BATTERY MANUFACTURING
AQ10B032 NUM      8      55        NUMBER OF ESTABLISHMENTS
AQ10B033 NUM      8      63        AVERAGE DAILY FLOW (MGD)
AQ10B041 CHAR     1      71        CAN MAKING
AQ10B042 NUM      8      72        NUMBER OF ESTABLISHMENTS
AQ10B043 NUM      8      80        AVERAGE DAILY FLOW (MGD)
AQ10B051 CHAR     1      88        CHEMICALS,INORGANIC
AQ10B052 NUM      8      89        NUMBER OF ESTABLISHMENTS
AQ10B053 NUM      8      97        AVERAGE DAILY FLOW (MGD)
AQ10B061 CHAR     1     105        ORG CHEMICALS, PLASTICS AND SYN FIBERS
AQ10B062 NUM      8     106        NUMBER OF ESTABLISHMENTS
AQ10B063 NUM      8     114        AVERAGE DAILY FLOW (MGD)
AQ10B071 CHAR     1     122        COIL COATING
AQ10B072 NUM      8     123        NUMBER OF ESTABLISHMENTS
AQ10B073 NUM      8     131        AVERAGE DAILY FLOW (MGD)
AQ10B081 CHAR     1     139        COPPER FORMING
AQ10B082 NUM      8     140        NUMBER OF ESTABLISHMENTS
AQ10B083 NUM      8     148        AVERAGE DAILY FLOW (MGD)
AQ10B091 CHAR     1     156        ELECTROPLATING
AQ10B092 NUM      8     157        NUMBER OF ESTABLISHMENTS
AQ10B093 NUM      8     165        AVERAGE DAILY FLOW (MGD)
AQ10B101 CHAR     1     173        ELECTRICAL AND ELECTRONIC COMPONENTS
AQ10B102 NUM      8     174        NUMBER OF ESTABLISHMENTS
AQ10B103 NUM      8     182        AVERAGE DAILY FLOW (MGD)
AQ10B111 CHAR     1     190        EXPLOSIVES MANUFACTURING
AQ10B112 NUM      8     191        NUMBER OF ESTABLISHMENTS
AQ10B113 NUM      8     199        AVERAGE DAILY FLOW (MGD)
AQ10B121 CHAR     1     207        FOOD AND FOOD PRODUCTS PROCESSING
AQ10B122 NUM      8     208        NUMBER OF ESTABLISHMENTS
AQ10B123 NUM      8     216        AVERAGE DAILY FLOW (MGD)
AQ10B131 CHAR     1     224        HAZORDOUS WASTE SITE CLEANUP
AQ10B132 NUM      8     225        NUMBER OF ESTABLISHMENTS
AQ10B133 NUM      8     233        AVERAGE DAILY FLOW (MGD)
AQ10B141 CHAR     1     241        IRON AND STEEL
AQ10B142 NUM      8     242        NUMBER OF ESTABLISHMENTS
AQ10B143 NUM      8     250        AVERAGE DAILY FLOW (MGD)
AQ10B151 CHAR     1     258        LABORATORIES AND HOSPITALS
AQ10B152 NUM      8     259        NUMBER OF ESTABLISHMENTS
AQ10B153 NUM      8     267        AVERAGE DAILY FLOW (MGD)
AQ10B161 CHAR     1     275        LAUNDRIES,INDUSTRIAL & COMMERCIAL
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

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VARIABLE TYPE  LENGTH POSITION      LABEL
AQ10B162 NUM        8      276      NUMBER OF ESTABLISHMENTS
AQ10B163 NUM        8      284      AVERAGE DAILY FLOW (MGD)
AQ10B171 CHAR       1      292      LEATHER TANNING & FINISHING
AQ10B172 NUM        8      293      NUMBER OF ESTABLISHMENTS
AQ10B173 NUM        8      301      AVERAGE DAILY FLOW (MGD)
AQ10B181 CHAR       1      309      METAL FINISHING
AQ10B182 NUM        8      310      NUMBER OF ESTABLISHMENTS
AQ10B183 NUM        8      318      AVERAGE DAILY FLOW (MGD)
EPISODE  CHAR       4       15      EPA EPISODE NUMBER
ST       CHAR       2        4      STATE POSTAL CODE
SURVEYID CHAR       9        6      SURVEY ID NUMBER
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                    CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

                              CONTENTS OF SAS MEMBER INDATA.S0104


VARIABLE TYPE  LENGTH POSITION      LABEL
AQ10B191 CHAR     1      19         METAL MOLDING & CASTING(FOUNDRIES)
AQ10B192 NUM      8      20         NUMBER OF ESTABLISHMENTS
AQ10B193 NUM      8      28         AVERAGE DAILY FLOW (MGD)
AQ10B201 CHAR     1      36         METALS FORMING, NON-FERROUS
AQ10B202 NUM      8      37         NUMBER OF ESTABLISHMENTS
AQ10B203 NUM      8      45         AVERAGE DAILY FLOW (MGD)
AQ10B211 CHAR     1      53         METALS MFG,NON-FERROUS
AQ10B212 NUM      8      54         NUMBER OF ESTABLISHMENTS
AQ10B213 NUM      8      62         AVERAGE DAILY FLOW (MGD)
AQ10B221 CHAR     1      70         MOTOR VEHICLE SERVICES(CLEANING)
AQ10B222 NUM      8      71         NUMBER OF ESTABLISHMENTS
AQ10B223 NUM      8      79         AVERAGE DAILY FLOW (MGD)
AQ10B231 CHAR     1      87         PAINT MFG & FORMULATION
AQ10B232 NUM      8      88         NUMBER OF ESTABLISHMENTS
AQ10B233 NUM      8      96         AVERAGE DAILY FLOW (MGD)
AQ10B241 CHAR     1     104         PESTICIDE MFG,FORM,PCK
AQ10B242 NUM      8     105         NUMBER OF ESTABLISHMENTS
AQ10B243 NUM      8     113         AVERAGE DAILY FLOW (MGD)
AQ10B251 CHAR     1     121         PETROLEUM REFINING
AQ10B252 NUM      8     122         NUMBER OF ESTABLISHMENTS
AQ10B253 NUM      8     130         AVERAGE DAILY FLOW (MGD)
AQ10B261 CHAR     1     138         PHARMACEUTICAL MFG,FORM,PCK
AQ10B262 NUM      8     139         NUMBER OF ESTABLISHMENTS
AQ10B263 NUM      8     147         AVERAGE DAILY FLOW (MGD)
AQ10B271 CHAR     1     155         PLASTICS MOLDING & FORMING
AQ10B272 NUM      8     156         NUMBER OF ESTABLISHMENTS
AQ10B273 NUM      8     164         AVERAGE DAILY FLOW (MGD)
AQ10B281 CHAR     1     172         PORCELAIN ENAMELING
AQ10B282 NUM      8     173         NUMBER OF ESTABLISHMENTS
AQ10B283 NUM      8     181         AVERAGE DAILY FLOW (MGD)
AQ10B291 CHAR     1     189         PULP & PAPER MILLS
AQ10B292 NUM      8     190         NUMBER OF ESTABLISHMENTS
AQ10B293 NUM      8     198         AVERAGE DAILY FLOW (MGD)
AQ10B301 CHAR     1     206         SOAP,DETERGENTS,CLEANING
AQ10B302 NUM      8     207         NUMBER OF ESTABLISHMENTS
AQ10B303 NUM      8     215         AVERAGE DAILY FLOW (MGD)
AQ10B311 CHAR     1     223         STEAM ELECTRIC POWER GENERATING
AQ10B312 NUM      8     224         NUMBER OF ESTABLISHMENTS
AQ10B313 NUM      8     232         AVERAGE DAILY FLOW (MGD)
AQ10B321 CHAR     1     240         TEXTILE MILLS
AQ10B322 NUM      8     241         NUMBER OF ESTABLISHMENTS
AQ10B323 NUM      8     249         AVERAGE DAILY FLOW (MGD)
AQ10B331 CHAR     1     257         TIMBER PRODUCTS PROCESSING
AQ10B332 NUM      8     258         NUMBER OF ESTABLISHMENTS
AQ10B333 NUM      8     266         AVERAGE DAILY FLOW (MGD)
AQ10B340 CHAR    50     291         SPECIFY THE OTHER CATEGORY
AQ10B341 CHAR     1     274         OTHER
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

```
VARIABLE TYPE   LENGTH POSITION     LABEL
AQ10B342 NUM         8      275     NUMBER OF ESTABLISHMENTS
AQ10B343 NUM         8      283     AVERAGE DAILY FLOW (MGD)
AQ10B350 CHAR       50      358     SPECIFY THE OTHER CATEGORY
AQ10B351 CHAR        1      341     OTHER
AQ10B352 NUM         8      342     NUMBER OF ESTABLISHMENTS
AQ10B353 NUM         8      350     AVERAGE DAILY FLOW (MGD)
AQ10B360 CHAR       50      425     SPECIFY THE OTHER CATEGORY
AQ10B361 CHAR        1      408     OTHER
AQ10B362 NUM         8      409     NUMBER OF ESTABLISHMENTS
AQ10B363 NUM         8      417     AVERAGE DAILY FLOW (MGD)
EPISODE  CHAR        4       15     EPA EPISODE NUMBER
ST       CHAR        2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0105

```
VARIABLE TYPE   LENGTH POSITION     LABEL
AQ11A     CHAR       1       19     ACTIVATED SLUDGE
AQ11B     CHAR       1       20     BAR SCREEN AND GRIT REMOVAL
AQ11C     CHAR       1       21     BIOLOGICAL DENITRIFICATION
AQ11D     CHAR       1       22     BIOLOGICAL NITRIFICATION
AQ11E     CHAR       1       23     CHEMICAL ADDITION
AQ11F     CHAR       1       24     DISINFECTION
AQ11F1    CHAR      15       25     SPECIFY DISINFECTION TYPE
AQ11G     CHAR       1       40     FLOTATION THICKENING
AQ11H     CHAR       1       41     MULTI-MEDIA FILTRATION(e.g., SAND)
AQ11I     CHAR       1       42     OXIDATION PONDS
AQ11J     CHAR       1       43     PRIMARY CLARIFICATION
AQ11K     CHAR       1       44     ROTATING BIOLOGICAL CONTACTOR
AQ11L     CHAR       1       45     SECONDARY CLARIFICATION
AQ11M     CHAR       1       46     TRICKLING FILTER
AQ11N     CHAR       1       47     OTHER WASTEWATER TREATMENT PROCESSES
AQ11N1    CHAR      15       48     OTHER WSTWTR TREATMENT PROCESS
AQ12A     CHAR       1       63     AEROBIC DIGESTION
AQ12B     CHAR       1       64     ANAEROBIC DIGESTION
AQ12C     CHAR       1       65     CENTRIFUGES
AQ12D     CHAR       1       66     CHLORINE OXIDATION
AQ12E     CHAR       1       67     COMPOSTING
AQ12F     CHAR       1       68     DRYING BEDS
AQ12G     CHAR       1       69     FILTER PRESSES
AQ12H     CHAR       1       70     FLOTATION THICKENING
AQ12I     CHAR       1       71     GRAVITY THICKENING
AQ12J     CHAR       1       72     HEAT TREATMENT
AQ12K     CHAR       1       73     LIME STABILIZATION
AQ12L     CHAR       1       74     POLYMER ADDITION
AQ12M     CHAR       1       75     VACUUM FILTRATION
AQ12N     CHAR       1       76     WET AIR OXIDATION
AQ12O     CHAR       1       77     OTHER TREATMENT PROCESSES
AQ12O1    CHAR      15       78     OTHER SEWAGE SLUDGE TREATMENT PROCESS
AQ12P     CHAR       1       93     SEWAGE SLUDGE IS PROCESSED OFF-SITE
AQ13A     CHAR       1       94     ABOVE-GROUND TANKS OR OTHER CONTAINERS
AQ13B     CHAR       1       95     AERATION LAGOONS
AQ13C     CHAR       1       96     CONTAINMENT PONDS
AQ13D     CHAR       1       97     DRYING OR GRAVITY THICKENING LAGOONS
AQ13E     CHAR       1       98     STABILIZATION PONDS
AQ13F     CHAR       1       99     SPECIFY OTHER
AQ13FOTH  CHAR      15      100     TREATMENT TAKES PLACE - OTHER
AQ14A     CHAR       1      115     ALUM
AQ14B     CHAR       1      116     FERRIC CHLORIDE
AQ14C     CHAR       1      117     FILTER AIDS
AQ14C1    CHAR       1      118     FILTER AID - SILICONE DIOXIDES
AQ14C2    CHAR       1      119     FILTER AID - CELITE
AQ14C3    CHAR       1      120     OTHER FILTER AIDS
AQ14C33   CHAR      15      121     SPECIFY OTHER FILTER AIDS
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

```
VARIABLE TYPE   LENGTH POSITION     LABEL
AQ14D    CHAR        1      136     LIME
AQ14E    CHAR        1      137     ORGANIC POLYMER
AQ14F    CHAR        1      138     PICKLE LIQUOR
AQ14G    CHAR        1      139     OTHER CHEMICAL OR MATERIAL
AQ14G1   CHAR       15      140     SPECIFY OTHER CHEMICAL OR MATERIAL
AQ14H    CHAR        1      155     NONE
AQ16     NUM         8      156     U.S. TONS(DRY WT) GENERATED IN 1988
AQ17     CHAR        1      164     SLUDGE COLLECTED AT MORE THAN ONE STATE
AQ17B1   CHAR        1      165     SLUDGES COMBINED FOR TRTMT & DISPOS
AQ17B2   CHAR        1      166     SLUDGES TRTMNT SEPARATE-COMBINED DISPOS
AQ17B3   CHAR        1      167     SEPERATE TRTMNT & DISPOSAL
AQ18     CHAR        1      168     TRANSFER TO A REGION/CENTRAL HANDLING?
AQ19A    CHAR       40      169     POTW NAME THAT RECEIVES YOUR SLUDGE
AQ19B    CHAR       20      209     RECEIVING POTW'S CITY
AQ19C    CHAR        2      229     RECEIVING POTW'S STATE
AQ19D    NUM         8      231     ANNUAL TONS TRANSFERRED (DRY WT)
AQ20     CHAR        1      239     SERVE AS REGION/CENTRAL HANDLING FAC?
EPISODE  CHAR        4       15     EPA EPISODE NUMBER
ST       CHAR        2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0106

VARIABLE	TYPE	LENGTH	POSITION	LABEL
AQ21A1	CHAR	40	19	CONTRIBUTING POTW'S NAME
AQ21A2	CHAR	20	59	CITY
AQ21A3	CHAR	2	79	STATE
AQ21A4	NUM	8	81	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21B1	CHAR	40	89	CONTRIBUTING POTW'S NAME
AQ21B2	CHAR	20	129	CITY
AQ21B3	CHAR	2	149	STATE
AQ21B4	NUM	8	151	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21C1	CHAR	40	159	CONTRIBUTING POTW'S NAME
AQ21C2	CHAR	20	199	CITY
AQ21C3	CHAR	2	219	STATE
AQ21C4	NUM	8	221	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21D1	CHAR	40	229	CONTRIBUTING POTW'S NAME
AQ21D2	CHAR	20	269	CITY
AQ21D3	CHAR	2	289	STATE
AQ21D4	NUM	8	291	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21E1	CHAR	40	299	CONTRIBUTING POTW'S NAME
AQ21E2	CHAR	20	339	CITY
AQ21E3	CHAR	2	359	STATE
AQ21E4	NUM	8	361	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21F1	CHAR	40	369	CONTRIBUTING POTW'S NAME
AQ21F2	CHAR	20	409	CITY
AQ21F3	CHAR	2	429	STATE
AQ21F4	NUM	8	431	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21G1	CHAR	40	439	CONTRIBUTING POTW'S NAME
AQ21G2	CHAR	20	479	CITY
AQ21G3	CHAR	2	499	STATE
AQ21G4	NUM	8	501	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21H1	CHAR	40	509	CONTRIBUTING POTW'S NAME
AQ21H2	CHAR	20	549	CITY
AQ21H3	CHAR	2	569	STATE
AQ21H4	NUM	8	571	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21I1	CHAR	40	579	CONTRIBUTING POTW'S NAME
AQ21I2	CHAR	20	619	CITY
AQ21I3	CHAR	2	639	STATE
AQ21I4	NUM	8	641	ANNUAL U.S. TONS RECEIVED (DRY WT)
AQ21J1	CHAR	40	649	CONTRIBUTING POTW'S NAME
AQ21J2	CHAR	20	689	CITY
AQ21J3	CHAR	2	709	STATE
AQ21J4	NUM	8	711	ANNUAL U.S. TONS RECEIVED (DRY WT)
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0107

```
VARIABLE TYPE   LENGTH POSITION      LABEL
AQ22      CHAR       1       19      IS SLUDGE STORAGE TEMP OR INDEFINITE?
AQ22B1    CHAR       1       20      SLUDGE PILE
AQ22B2    CHAR       1       21      SLUDGE STORAGE IMPOUNDMENT
AQ22B3    CHAR       1       22      ABOVE-GROUND TANK OR OTHER CONTAINER
AQ22B4    CHAR       1       23      OTHER TYPE OF STORAGE
AQ22B40   CHAR      15       24      SPECIFY OTHER TYPE OF STORAGE
AQ23A     CHAR       1       39      STORED - LESS THAN 1 YEAR
AQ23B     CHAR       1       40      STORED - 1 TO 2 YEARS
AQ23C     CHAR       1       41      STORED - 2 TO 5 YEARS
AQ23D     CHAR       1       42      STORED - 5 TO 10 YEARS
AQ23E     CHAR       1       43      STORED - 10 OR MORE YEARS
AQ23F     CHAR       1       44      STORED - NO PLANS TO REMOVE SLUDGE
AQ24A1    NUM        8       45      QUANTITY - LAND APPLICATION(U.S. TONS)
AQ24A2    NUM        8       53      % - LAND APPLICATION
AQ24B1    NUM        8       61      QUANTITY - DISTRIBUTION AND MARKETING
AQ24B2    NUM        8       69      % - DISTRIBUTION AND MARKETING
AQ24C1    NUM        8       77      QUANTITY - INCINERATION
AQ24C2    NUM        8       85      % - INCINERATION
AQ24D1    NUM        8       93      QUANTITY - MONOFILL
AQ24D2    NUM        8      101      % - MONOFILL
AQ24E1    NUM        8      109      QUANTITY - CO-DISPOSAL LANDFILL
AQ24E2    NUM        8      117      % - CO-DISPOSAL LANDFILL
AQ24F1    NUM        8      368      QUANTITY - OCEAN DISPOSAL
AQ24F2    NUM        8      125      % - OCEAN DISPOSAL
AQ24G1    NUM        8      133      QUANTITY - CO-INCINERATION
AQ24G2    NUM        8      141      % - CO-INCINERATION
AQ24H1    NUM        8      149      QUANTITY - SURFACE DISPOSAL
AQ24H2    NUM        8      157      % - SURFACE DISPOSAL
AQ24I1    CHAR      15      165      SPECIFY OTHER
AQ24I2    NUM        8      180      QUANTITY - OTHER
AQ24I3    NUM        8      188      % - OTHER
AQ25      CHAR       2      196      IMPLEMENTED A WSTWTR PRETREATMENT PRG?
AQ25B1    CHAR       1      198      ACIDITY
AQ25B2    CHAR       1      199      COMBUSTIBILITY
AQ25B3    CHAR       1      200      FEDERAL CATEGORICAL PRETRT STDS
AQ25B4    CHAR       1      201      TO PREVENT INTERFERENCE
AQ25B5    CHAR       1      202      TEMPERATURE OF DISCHARGE
AQ25B6    CHAR       1      203      OTHER
AQ25B60   CHAR      15      204      SPECIFY OTHER
AQ26      CHAR       1      219      HAVE YOU COMPLETED AN INDUSTRIAL SURVEY?
AQ27      CHAR       1      220      REDUCTIONS TECHNICALLY ACHIEVABLE?
AQ27C     CHAR      25      221      COMMENTS
AQ28      CHAR       1      246      REDUCTIONS IN SLUDGE POLLUTANT ACHIEVED?
AQ28C     CHAR      25      247      COMMENTS
AQ29AOTH  CHAR      10      278      SPECIFY OTHER FREQUENCY OF TESTING - BOD
AQ29A1    CHAR       1      272      INFLUENT BOD - DAILY
AQ29A2    CHAR       1      273      INFLUENT BOD - WEEKLY
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
AQ29A3	CHAR	1	274	INFLUENT BOD - MONTHLY
AQ29A4	CHAR	1	275	INFLUENT BOD - QUARTERLY
AQ29A5	CHAR	1	276	INFLUENT BOD - ANNUALLY
AQ29A6	CHAR	1	277	INFLUENT BOD - OTHER
AQ29BOTH	CHAR	10	294	SPECIFY OTHER FREQUENCY OF TESTING - TSS
AQ29B1	CHAR	1	288	INFLUENT TSS - DAILY
AQ29B2	CHAR	1	289	INFLUENT TSS - WEEKLY
AQ29B3	CHAR	1	290	INFLUENT TSS - MONTHLY
AQ29B4	CHAR	1	291	INFLUENT TSS - QUARTERLY
AQ29B5	CHAR	1	292	INFLUENT TSS - ANNUALLY
AQ29B6	CHAR	1	293	INFLUENT TSS - OTHER
AQ29COTH	CHAR	10	310	SPECIFY OTHER FREQUENCY OF TESTING - BOD
AQ29C1	CHAR	1	304	EFFLUENT BOD - DAILY
AQ29C2	CHAR	1	305	EFFLUENT BOD - WEEKLY
AQ29C3	CHAR	1	306	EFFLUENT BOD - MONTHLY
AQ29C4	CHAR	1	307	EFFLUENT BOD - QUARTERLY
AQ29C5	CHAR	1	308	EFFLUENT BOD - ANNUALLY
AQ29C6	CHAR	1	309	EFFLUENT BOD - OTHER
AQ29DOTH	CHAR	10	326	SPECIFY OTHER FREQUENCY OF TESTING - TSS
AQ29D1	CHAR	1	320	EFFLUENT TSS - DAILY
AQ29D2	CHAR	1	321	EFFLUENT TSS - WEEKLY
AQ29D3	CHAR	1	322	EFFLUENT TSS - MONTHLY
AQ29D4	CHAR	1	323	EFFLUENT TSS - QUARTERLY
AQ29D5	CHAR	1	324	EFFLUENT TSS - ANNUALLY
AQ29D6	CHAR	1	325	EFFLUENT TSS - OTHER
AQ30A	NUM	8	336	ANNUAL AVG INFLUENT BOD (mg/liter)
AQ30B	NUM	8	344	ANNUAL AVG INFLUENT TSS (mg/liter)
AQ30C	NUM	8	352	ANNUAL AVG EFFLUENT BOD (mg/liter)
AQ30D	NUM	8	360	ANNUAL AVG EFFLUENT TSS (mg/liter)
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0108

```
VARIABLE TYPE   LENGTH POSITION     LABEL
AQ31      CHAR       1       19     SLUDGE ANALYZED FOR METAL POLLUTANTS?
AQ31BPOL  CHAR      15      212     SPECIFY OTHER POLLUTANT
AQ31B10   CHAR      10       26     OTHER TESTING OF ARSENIC
AQ31B100  CHAR      10      170     OTHER TESTING OF NICKEL
AQ31B11   CHAR       1       20     ARSENIC - DAILY
AQ31B101  CHAR       1      164     NICKEL - DAILY
AQ31B102  CHAR       1      165     NICKEL - WEEKLY
AQ31B103  CHAR       1      166     NICKEL - MONTHLY
AQ31B104  CHAR       1      167     NICKEL - QUARTERLY
AQ31B105  CHAR       1      168     NICKEL - ANNUALLY
AQ31B106  CHAR       1      169     NICKEL - SPECIFY OTHER
AQ31B110  CHAR      10      186     OTHER TESTING OF SELENIUM
AQ31B12   CHAR       1       21     ARSENIC - WEEKLY
AQ31B111  CHAR       1      180     SELENIUM - DAILY
AQ31B112  CHAR       1      181     SELENIUM - WEEKLY
AQ31B113  CHAR       1      182     SELENIUM - MONTHLY
AQ31B114  CHAR       1      183     SELENIUM - QUARTERLY
AQ31B115  CHAR       1      184     SELENIUM - ANNUALLY
AQ31B116  CHAR       1      185     SELENIUM - SPECIFY OTHER
AQ31B120  CHAR      10      202     OTHER TESTING OF ZINC
AQ31B13   CHAR       1       22     ARSENIC - MONTHLY
AQ31B121  CHAR       1      196     ZINC - DAILY
AQ31B122  CHAR       1      197     ZINC - WEEKLY
AQ31B123  CHAR       1      198     ZINC - MONTHLY
AQ31B124  CHAR       1      199     ZINC - QUARTERLY
AQ31B125  CHAR       1      200     ZINC - ANNUALLY
AQ31B126  CHAR       1      201     ZINC - SPECIFY OTHER
AQ31B130  CHAR      10      233     OTHER TESTING OF OTHER
AQ31B14   CHAR       1       23     ARSENIC - QUARTERLY
AQ31B15   CHAR       1       24     ARSENIC - ANNUALLY
AQ31B16   CHAR       1       25     ARSENIC - SPECIFY OTHER
AQ31B131  CHAR       1      227     OTHER - DAILY
AQ31B132  CHAR       1      228     OTHER - WEEKLY
AQ31B133  CHAR       1      229     OTHER - MONTHLY
AQ31B134  CHAR       1      230     OTHER - QUARTERLY
AQ31B135  CHAR       1      231     OTHER - ANNUALLY
AQ31B136  CHAR       1      232     OTHER - SPECIFY OTHER
AQ31B20   CHAR      10       42     OTHER TESTING OF BERYLLIUM
AQ31B21   CHAR       1       36     BERYLLIUM - DAILY
AQ31B22   CHAR       1       37     BERYLLIUM - WEEKLY
AQ31B23   CHAR       1       38     BERYLLIUM - MONTHLY
AQ31B24   CHAR       1       39     BERYLLIUM - QUARTERLY
AQ31B25   CHAR       1       40     BERYLLIUM - ANNUALLY
AQ31B26   CHAR       1       41     BERYLLIUM - SPECIFY OTHER
AQ31B30   CHAR      10       58     OTHER TESTING OF CADMIUM
AQ31B31   CHAR       1       52     CADMIUM - DAILY
AQ31B32   CHAR       1       53     CADMIUM - WEEKLY
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
AQ31B33	CHAR	1	54	CADMIUM - MONTHLY
AQ31B34	CHAR	1	55	CADMIUM - QUARTERLY
AQ31B35	CHAR	1	56	CADMIUM - ANNUALLY
AQ31B36	CHAR	1	57	CADMIUM - SPECIFY OTHER
AQ31B40	CHAR	10	74	OTHER TESTING OF CHROMIUM
AQ31B41	CHAR	1	68	CHROMIUM - DAILY
AQ31B42	CHAR	1	69	CHROMIUM - WEEKLY
AQ31B43	CHAR	1	70	CHROMIUM - MONTHLY
AQ31B44	CHAR	1	71	CHROMIUM - QUARTERLY
AQ31B45	CHAR	1	72	CHROMIUM - ANNUALLY
AQ31B46	CHAR	1	73	CHROMIUM - SPECIFY OTHER
AQ31B50	CHAR	10	90	OTHER TESTING OF COPPER
AQ31B51	CHAR	1	84	COPPER - DAILY
AQ31B52	CHAR	1	85	COPPER - WEEKLY
AQ31B53	CHAR	1	86	COPPER - MONTHLY
AQ31B54	CHAR	1	87	COPPER - QUARTERLY
AQ31B55	CHAR	1	88	COPPER - ANNUALLY
AQ31B56	CHAR	1	89	COPPER - SPECIFY OTHER
AQ31B60	CHAR	10	106	OTHER TESTING OF IRON
AQ31B61	CHAR	1	100	IRON - DAILY
AQ31B62	CHAR	1	101	IRON - WEEKLY
AQ31B63	CHAR	1	102	IRON - MONTHLY
AQ31B64	CHAR	1	103	IRON - QUARTERLY
AQ31B65	CHAR	1	104	IRON - ANNUALLY
AQ31B66	CHAR	1	105	IRON - SPECIFY OTHER
AQ31B70	CHAR	10	122	OTHER TESTING OF LEAD
AQ31B71	CHAR	1	116	LEAD - DAILY
AQ31B72	CHAR	1	117	LEAD - WEEKLY
AQ31B73	CHAR	1	118	LEAD - MONTHLY
AQ31B74	CHAR	1	119	LEAD - QUARTERLY
AQ31B75	CHAR	1	120	LEAD - ANNUALLY
AQ31B76	CHAR	1	121	LEAD - SPECIFY OTHER
AQ31B80	CHAR	10	138	OTHER TESTING OF MERCURY
AQ31B81	CHAR	1	132	MERCURY - DAILY
AQ31B82	CHAR	1	133	MERCURY - WEEKLY
AQ31B83	CHAR	1	134	MERCURY - MONTHLY
AQ31B84	CHAR	1	135	MERCURY - QUARTERLY
AQ31B85	CHAR	1	136	MERCURY - ANNUALLY
AQ31B86	CHAR	1	137	MERCURY - SPECIFY OTHER
AQ31B90	CHAR	10	154	OTHER TESTING OF MOLYBDENUM
AQ31B91	CHAR	1	148	MOLYBDENUM - DAILY
AQ31B92	CHAR	1	149	MOLYBDENUM - WEEKLY
AQ31B93	CHAR	1	150	MOLYBDENUM - MONTHLY
AQ31B94	CHAR	1	151	MOLYBDENUM - QUARTERLY
AQ31B95	CHAR	1	152	MOLYBDENUM - ANNUALLY
AQ31B96	CHAR	1	153	MOLYBDENUM - SPECIFY OTHER
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0109

```
VARIABLE TYPE  LENGTH POSITION      LABEL
AQ32      CHAR     1      19       ANALYZE SEWAGE SLUDGE?
AQ32B10   CHAR    10      26       OTHER TESTING OF ALDRIN/DIELDRIN
AQ32B100  CHAR    10     170       OTHER TESTING OF 3,3,DICHLOROBENZENE
AQ32B11   CHAR     1      20       ALDRIN/DIELDRIN - DAILY
AQ32B101  CHAR     1     164       3,3,DICHLOROBENZENE - DAILY
AQ32B102  CHAR     1     165       3,3,DICHLOROBENZENE - WEEKLY
AQ32B103  CHAR     1     166       3,3,DICHLOROBENZENE - MONTHLY
AQ32B104  CHAR     1     167       3,3,DICHLOROBENZENE - QUARTERLY
AQ32B105  CHAR     1     168       3,3,DICHLOROBENZENE - ANNUALLY
AQ32B106  CHAR     1     169       3,3,DICHLOROBENZENE - OTHER
AQ32B110  CHAR    10     186       OTHER 2,4-DICHLOROPHENOXY ACETIC ACID
AQ32B12   CHAR     1      21       ALDRIN/DIELDRIN - WEEKLY
AQ32B111  CHAR     1     180       2,4-DICHLOROPHENOXY ACETIC ACID - DAILY
AQ32B112  CHAR     1     181       2,4-DICHLOROPHENOXY ACETIC ACID - WEEKLY
AQ32B113  CHAR     1     182       2,4-DICHLOROPHENOXY ACETIC ACID - MONTH
AQ32B114  CHAR     1     183       2,4-DICHLOROPHENOXY ACETIC ACID - QT
AQ32B115  CHAR     1     184       2,4-DICHLOROPHENOXY ACETIC ACID - YR
AQ32B116  CHAR     1     185       2,4-DICHLOROPHENOXY ACETIC ACID - OTHER
AQ32B120  CHAR    10     202       OTHER TESTING OF DIMETHYL NITROSAMINE
AQ32B13   CHAR     1      22       ALDRIN/DIELDRIN - MONTHLY
AQ32B121  CHAR     1     196       DIMETHYL NITROSAMINE - DAILY
AQ32B122  CHAR     1     197       DIMETHYL NITROSAMINE - WEEKLY
AQ32B123  CHAR     1     198       DIMETHYL NITROSAMINE - MONTHLY
AQ32B124  CHAR     1     199       DIMETHYL NITROSAMINE - QUARTERLY
AQ32B125  CHAR     1     200       DIMETHYL NITROSAMINE - ANNUALLY
AQ32B126  CHAR     1     201       DIMETHYL NITROSAMINE - OTHER
AQ32B130  CHAR    10     218       OTHER TESTING OF ENDRIN
AQ32B14   CHAR     1      23       ALDRIN/DIELDRIN - QUARTERLY
AQ32B131  CHAR     1     212       ENDRIN - DAILY
AQ32B132  CHAR     1     213       ENDRIN - WEEKLY
AQ32B133  CHAR     1     214       ENDRIN - MONTHLY
AQ32B134  CHAR     1     215       ENDRIN - QUARTERLY
AQ32B135  CHAR     1     216       ENDRIN - ANNUALLY
AQ32B136  CHAR     1     217       ENDRIN - OTHER
AQ32B140  CHAR    10     234       OTHER TESTING OF FLUORIDE
AQ32B15   CHAR     1      24       ALDRIN/DIELDRIN - ANNUALLY
AQ32B16   CHAR     1      25       ALDRIN/DIELDRIN - OTHER
AQ32B141  CHAR     1     228       FLUORIDE - DAILY
AQ32B142  CHAR     1     229       FLUORIDE - WEEKLY
AQ32B143  CHAR     1     230       FLUORIDE - MONTHLY
AQ32B144  CHAR     1     231       FLUORIDE - QUARTERLY
AQ32B145  CHAR     1     232       FLUORIDE - ANNUALLY
AQ32B146  CHAR     1     233       FLUORIDE - OTHER
AQ32B20   CHAR    10      42       OTHER TESTING OF BENZENE
AQ32B21   CHAR     1      36       BENZENE - DAILY
AQ32B22   CHAR     1      37       BENZENE - WEEKLY
AQ32B23   CHAR     1      38       BENZENE - MONTHLY
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
AQ32B24	CHAR	1	39	BENZENE - QUARTERLY
AQ32B25	CHAR	1	40	BENZENE - ANNUALLY
AQ32B26	CHAR	1	41	BENZENE - OTHER
AQ32B30	CHAR	10	58	OTHER TESTING OF BENZO(a)ANTHRACENE
AQ32B31	CHAR	1	52	BENZO(a)ANTHRACENE - DAILY
AQ32B32	CHAR	1	53	BENZO(a)ANTHRACENE - WEEKLY
AQ32B33	CHAR	1	54	BENZO(a)ANTHRACENE - MONTHLY
AQ32B34	CHAR	1	55	BENZO(a)ANTHRACENE - QUARTERLY
AQ32B35	CHAR	1	56	BENZO(a)ANTHRACENE - ANNUALLY
AQ32B36	CHAR	1	57	BENZO(a)ANTHRACENE - OTHER
AQ32B40	CHAR	10	74	OTHER TESTING OF BENZO(a)PYRENE
AQ32B41	CHAR	1	68	BENZO(a)PYRENE - DAILY
AQ32B42	CHAR	1	69	BENZO(a)PYRENE - WEEKLY
AQ32B43	CHAR	1	70	BENZO(a)PYRENE - MONTHLY
AQ32B44	CHAR	1	71	BENZO(a)PYRENE - QUARTERLY
AQ32B45	CHAR	1	72	BENZO(a)PYRENE - ANNUALLY
AQ32B46	CHAR	1	73	BENZO(a)PYRENE - OTHER
AQ32B50	CHAR	10	90	OTHER BIS(2-ETHYL HEXYL) PHTHALATE
AQ32B51	CHAR	1	84	BIS(2-ETHYL HEXYL) PHTHALATE - DAILY
AQ32B52	CHAR	1	85	BIS(2-ETHYL HEXYL) PHTHALATE - WEEKLY
AQ32B53	CHAR	1	86	BIS(2-ETHYL HEXYL) PHTHALATE - MONTHLY
AQ32B54	CHAR	1	87	BIS(2-ETHYL HEXYL) PHTHALATE - QUARTERLY
AQ32B55	CHAR	1	88	BIS(2-ETHYL HEXYL) PHTHALATE - ANNUALLY
AQ32B56	CHAR	1	89	BIS(2-ETHYL HEXYL) PHTHALATE - OTHER
AQ32B60	CHAR	10	106	OTHER TESTING OF CARBON
AQ32B61	CHAR	1	100	CARBON TETRACHLORIDE - DAILY
AQ32B62	CHAR	1	101	CARBON TETRACHLORIDE - WEEKLY
AQ32B63	CHAR	1	102	CARBON TETRACHLORIDE - MONTHLY
AQ32B64	CHAR	1	103	CARBON TETRACHLORIDE - QUARTERLY
AQ32B65	CHAR	1	104	CARBON TETRACHLORIDE - ANNUALLY
AQ32B66	CHAR	1	105	CARBON TETRACHLORIDE - OTHER
AQ32B70	CHAR	10	122	OTHER TESTING OF CHLORDANE
AQ32B71	CHAR	1	116	CHLORDANE - DAILY
AQ32B72	CHAR	1	117	CHLORDANE - WEEKLY
AQ32B73	CHAR	1	118	CHLORDANE - MONTHLY
AQ32B74	CHAR	1	119	CHLORDANE - QUARTERLY
AQ32B75	CHAR	1	120	CHLORDANE - ANNUALLY
AQ32B76	CHAR	1	121	CHLORDANE - OTHER
AQ32B80	CHAR	10	138	OTHER TESTING OF CYANIDE
AQ32B81	CHAR	1	132	CYANIDE - DAILY
AQ32B82	CHAR	1	133	CYANIDE - WEEKLY
AQ32B83	CHAR	1	134	CYANIDE - MONTHLY
AQ32B84	CHAR	1	135	CYANIDE - QUARTERLY
AQ32B85	CHAR	1	136	CYANIDE - ANNUALLY
AQ32B86	CHAR	1	137	CYANIDE - OTHER
AQ32B90	CHAR	10	154	OTHER TESTING OF DDT/DDD/DDE
AQ32B91	CHAR	1	148	DDT/DDD/DDE - DAILY
AQ32B92	CHAR	1	149	DDT/DDD/DDE - WEEKLY
AQ32B93	CHAR	1	150	DDT/DDD/DDE - MONTHLY
AQ32B94	CHAR	1	151	DDT/DDD/DDE - QUARTERLY
AQ32B95	CHAR	1	152	DDT/DDD/DDE - ANNUALLY
AQ32B96	CHAR	1	153	DDT/DDD/DDE - OTHER
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0110

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VARIABLE TYPE   LENGTH POSITION      LABEL
AQ32BPOL CHAR       15      227      SPECIFY OTHER POLLUTANT
AQ32B150 CHAR       10       25      OTHER TESTING OF HEPTACHLOR
AQ32B151 CHAR        1       19      HEPTACHLOR - DAILY
AQ32B152 CHAR        1       20      HEPTACHLOR - WEEKLY
AQ32B153 CHAR        1       21      HEPTACHLOR - MONTHLY
AQ32B154 CHAR        1       22      HEPTACHLOR - QUARTERLY
AQ32B155 CHAR        1       23      HEPTACHLOR - ANNUALLY
AQ32B156 CHAR        1       24      HEPTACHLOR - OTHER
AQ32B160 CHAR       10       41      OTHER TESTING OF HEXACHLOROBENZENE
AQ32B161 CHAR        1       35      HEXACHLOROBENZENE - DAILY
AQ32B162 CHAR        1       36      HEXACHLOROBENZENE - WEEKLY
AQ32B163 CHAR        1       37      HEXACHLOROBENZENE - MONTHLY
AQ32B164 CHAR        1       38      HEXACHLOROBENZENE - QUARTERLY
AQ32B165 CHAR        1       39      HEXACHLOROBENZENE - ANNUALLY
AQ32B166 CHAR        1       40      HEXACHLOROBENZENE - OTHER
AQ32B170 CHAR       10       57      OTHER TESTING OF HEXACHLOROBUTADIENE
AQ32B171 CHAR        1       51      HEXACHLOROBUTADIENE - DAILY
AQ32B172 CHAR        1       52      HEXACHLOROBUTADIENE - WEEKLY
AQ32B173 CHAR        1       53      HEXACHLOROBUTADIENE - MONTHLY
AQ32B174 CHAR        1       54      HEXACHLOROBUTADIENE - QUARTERLY
AQ32B175 CHAR        1       55      HEXACHLOROBUTADIENE - ANNUALLY
AQ32B176 CHAR        1       56      HEXACHLOROBUTADIENE - OTHER
AQ32B180 CHAR       10       73      OTHER TESTING OF LINDANE
AQ32B181 CHAR        1       67      LINDANE - DAILY
AQ32B182 CHAR        1       68      LINDANE - WEEKLY
AQ32B183 CHAR        1       69      LINDANE - MONTHLY
AQ32B184 CHAR        1       70      LINDANE - QUARTERLY
AQ32B185 CHAR        1       71      LINDANE - ANNUALLY
AQ32B186 CHAR        1       72      LINDANE - OTHER
AQ32B190 CHAR       10       89      OTHER TESTING OF MALATHION
AQ32B191 CHAR        1       83      MALATHION - DAILY
AQ32B192 CHAR        1       84      MALATHION - WEEKLY
AQ32B193 CHAR        1       85      MALATHION - MONTHLY
AQ32B194 CHAR        1       86      MALATHION - QUARTERLY
AQ32B195 CHAR        1       87      MALATHION - ANNUALLY
AQ32B196 CHAR        1       88      MALATHION - OTHER
AQ32B200 CHAR       10      105      OTHER TESTING OF METHYLENE CHLORIDE
AQ32B201 CHAR        1       99      METHYLENE CHLORIDE - DAILY
AQ32B202 CHAR        1      100      METHYLENE CHLORIDE - WEEKLY
AQ32B203 CHAR        1      101      METHYLENE CHLORIDE - MONTHLY
AQ32B204 CHAR        1      102      METHYLENE CHLORIDE - QUARTERLY
AQ32B205 CHAR        1      103      METHYLENE CHLORIDE - ANNUALLY
AQ32B206 CHAR        1      104      METHYLENE CHLORIDE - OTHER
AQ32B210 CHAR       10      121      OTHER TESTING OF PENTACHLOROPHENOL
AQ32B211 CHAR        1      115      PENTACHLOROPHENOL - DAILY
AQ32B212 CHAR        1      116      PENTACHLOROPHENOL - WEEKLY
AQ32B213 CHAR        1      117      PENTACHLOROPHENOL - MONTHLY
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

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VARIABLE TYPE  LENGTH POSITION    LABEL
AQ32B214 CHAR       1      118    PENTACHLOROPHENOL - QUARTERLY
AQ32B215 CHAR       1      119    PENTACHLOROPHENOL - ANNUALLY
AQ32B216 CHAR       1      120    PENTACHLOROPHENOL - OTHER
AQ32B220 CHAR      10      137    OTHER TESTING OF PHENOL
AQ32B221 CHAR       1      131    PHENOL - DAILY
AQ32B222 CHAR       1      132    PHENOL - WEEKLY
AQ32B223 CHAR       1      133    PHENOL - MONTHLY
AQ32B224 CHAR       1      134    PHENOL - QUARTERLY
AQ32B225 CHAR       1      135    PHENOL - ANNUALLY
AQ32B226 CHAR       1      136    PHENOL - OTHER
AQ32B230 CHAR      10      153    OTHER TESTING OF PCB
AQ32B231 CHAR       1      147    PCB'S - DAILY
AQ32B232 CHAR       1      148    PCB'S - WEEKLY
AQ32B233 CHAR       1      149    PCB'S - MONTHLY
AQ32B234 CHAR       1      150    PCB'S - QUARTERLY
AQ32B235 CHAR       1      151    PCB'S - ANNUALLY
AQ32B236 CHAR       1      152    PCB'S - OTHER
AQ32B240 CHAR      10      169    OTHER TESTING OF TETRACHLOROETHYLENE
AQ32B241 CHAR       1      163    TETRACHLOROETHYLENE - DAILY
AQ32B242 CHAR       1      164    TETRACHLOROETHYLENE - WEEKLY
AQ32B243 CHAR       1      165    TETRACHLOROETHYLENE - MONTHLY
AQ32B244 CHAR       1      166    TETRACHLOROETHYLENE - QUARTERLY
AQ32B245 CHAR       1      167    TETRACHLOROETHYLENE - ANNUALLY
AQ32B246 CHAR       1      168    TETRACHLOROETHYLENE - OTHER
AQ32B250 CHAR      10      185    OTHER TESTING OF TOXAPHENE
AQ32B251 CHAR       1      179    TOXAPHENE - DAILY
AQ32B252 CHAR       1      180    TOXAPHENE - WEEKLY
AQ32B253 CHAR       1      181    TOXAPHENE - MONTHLY
AQ32B254 CHAR       1      182    TOXAPHENE - QUARTERLY
AQ32B255 CHAR       1      183    TOXAPHENE - ANNUALLY
AQ32B256 CHAR       1      184    TOXAPHENE - OTHER
AQ32B260 CHAR      10      201    OTHER TESTING OF TRICHLOROETHYLENE
AQ32B261 CHAR       1      195    TRICHLOROETHYLENE - DAILY
AQ32B262 CHAR       1      196    TRICHLOROETHYLENE - WEEKLY
AQ32B263 CHAR       1      197    TRICHLOROETHYLENE - MONTHLY
AQ32B264 CHAR       1      198    TRICHLOROETHYLENE - QUARTERLY
AQ32B265 CHAR       1      199    TRICHLOROETHYLENE - ANNUALLY
AQ32B266 CHAR       1      200    TRICHLOROETHYLENE - OTHER
AQ32B270 CHAR      10      217    OTHER TESTING OF VINYL CHLORIDE
AQ32B271 CHAR       1      211    VINYL CHLORIDE - DAILY
AQ32B272 CHAR       1      212    VINYL CHLORIDE - WEEKLY
AQ32B273 CHAR       1      213    VINYL CHLORIDE - MONTHLY
AQ32B274 CHAR       1      214    VINYL CHLORIDE - QUARTERLY
AQ32B275 CHAR       1      215    VINYL CHLORIDE - ANNUALLY
AQ32B276 CHAR       1      216    VINYL CHLORIDE - OTHER
AQ32B280 CHAR      10      248    TESTING OF OTHER POLLUTANT
AQ32B281 CHAR       1      242    OTHER POLLUTANT - DAILY
AQ32B282 CHAR       1      243    OTHER POLLUTANT - WEEKLY
AQ32B283 CHAR       1      244    OTHER POLLUTANT - MONTHLY
AQ32B284 CHAR       1      245    OTHER POLLUTANT - QUARTERLY
AQ32B285 CHAR       1      246    OTHER POLLUTANT - ANNUALLY
AQ32B286 CHAR       1      247    OTHER POLLUTANT - OTHER
EPISODE  CHAR       4       15    EPA EPISODE NUMBER
ST       CHAR       2        4    STATE POSTAL CODE
SURVEYID CHAR       9        6    SURVEY ID NUMBER
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0111

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VARIABLE TYPE   LENGTH POSITION     LABEL
AQ33A     NUM        8       19     USER SEWER CHARGES: RESIDENTIAL
AQ33B     NUM        8       27     USER SEWER CHARGES: INDUSTRIAL
AQ33C     NUM        8       35     USER SEWER CHARGES: OTHER(COMM,INST)
AQ33D     NUM        8       43     SEWAGE SLUDGE SALES
AQ33E     NUM        8       51     TAXES: MUNICIPAL & OTHER
AQ33F     NUM        8       74     AMOUNT OF REVENUE - OTHER
AQ33FOTH CHAR       15       59     OTHER SOURCE OF REVENUE
AQ33G     NUM        8       82     AMOUNT OF REVENUE - TOTAL
AQ34A     NUM        8       90     ESTIMATE FIXED EXPENSES
AQ34B1    NUM        8       98     EXPENSES FOR WSTWTR TREATMENT
AQ34B2    NUM        8      106     EXPENSES FOR ON-SITE MAN. & DISP.
AQ34B3    NUM        8      114     EXPENSES FOR MAN. & DISP. OFF-SITE
AQ34B4    NUM        8      122     TOTAL EXPENSES
AQ35A     CHAR       1      130     BOND ISSUE
AQ35B     CHAR       1      131     INCREASE USER RATES
AQ35C     CHAR       1      132     LOAN
AQ35D     CHAR       1      133     OTHER
AQ35DOTH CHAR       15      134     SPECIFY OTHER
AQ36A     CHAR       1      149     LAND APPLICATION
AQ36B     CHAR       1      150     DISTRIBUTION & MARKETING
AQ36C     CHAR       1      151     INCINERATION
AQ36D     CHAR       1      152     MONOFILL
AQ36E     CHAR       1      153     CO-DISPOSAL LANDFILL
AQ36F     CHAR       1      154     OCEAN DISPOSAL
AQ37      CHAR       1      155     CERTIFICATION FILLED OUT AND SIGNED
EPISODE   CHAR       4       15     EPA EPISODE NUMBER
ST        CHAR       2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0201

VARIABLE	TYPE	LENGTH	POSITION	LABEL
BQ1A	NUM	8	19	% - ANIMAL FEED CROP LAND(NOT PASTURE)
BQ1B	NUM	8	27	% - DEDICATED LAND
BQ1C	NUM	8	35	% - GOLF COURSES
BQ1D	NUM	8	43	% - HUMAN FOOD CROP LAND
BQ1E	NUM	8	51	% - LAND RECLAMATION
BQ1F	NUM	8	59	% - LANDSCAPE CONTRACTORS
BQ1G	NUM	8	67	% - MUNICIPAL PARKS AND HIGHWAYS
BQ1H	NUM	8	75	% - PASTURE LAND
BQ1I	NUM	8	83	% - SILVICULTURE LAND
BQ1J	NUM	8	91	% - OTHER LAND APP
BQ1JJ	CHAR	15	99	SPECIFY OTHER LAND APP
BQ10A	CHAR	1	257	CO-DISPOSAL LANDFILL - LAND APP ALTER.
BQ10B	CHAR	1	258	CO-INCINERATION - LAND APP ALTER.
BQ10C	CHAR	1	259	D & M - LAND APP ALTER.
BQ10D	CHAR	1	260	INCINERATION - LAND APP ALTER.
BQ10E	CHAR	1	261	MONOFILL - LAND APP ALTER.
BQ10F	CHAR	1	262	SURFACE DISPOSAL - LAND APP ALTER.
BQ10G	CHAR	1	263	OTHER PRACTICE - LAND APP ALTER.
BQ10GG	CHAR	15	264	SPECIFY OTHER PRACTICE
BQ11A	CHAR	1	279	WHY CHANGE - CHANGE IN WSTWTR TRTMNT TEC
BQ11B	CHAR	1	280	WHY CHANGE - COST OF MAINTAINING LAND AP
BQ11C	CHAR	1	281	WHY CHANGE - INCREASED SLUDGE VOLUME
BQ11D	CHAR	1	282	WHY CHANGE - PERMIT CONDITIONS
BQ11E	CHAR	1	283	WHY CHANGE - PUBLIC CONCERN
BQ11F	CHAR	1	284	WHY CHANGE - REGULATORY REQUIREMENTS
BQ11G	CHAR	1	285	WHY CHANGE - OTHER REASON
BQ11GG	CHAR	15	286	SPECIFY OTHER REASON
BQ12	CHAR	2	301	NON-AG LAND AVAILABLE AS AN ALTERNATIVE
BQ13A	CHAR	1	303	CO-DISPOSAL
BQ13AA	NUM	8	304	% LAND APP SHIFTED - CO-DISPOSAL
BQ13B	CHAR	1	312	CO-INCINERATION
BQ13BB	NUM	8	313	% LAND APP SHIFTED - CO-INCINERATION
BQ13C	CHAR	1	321	DISTRIBUTION AND MARKETING
BQ13CC	NUM	8	322	% LAND APP SHIFTED - D & M
BQ13D	CHAR	1	330	INCINERATION - NEW,ON-SITE
BQ13DD	NUM	8	331	% LAND APP SHIFTED - INCIN-NEW,ON-SITE
BQ13E	CHAR	1	339	INCINERATION EXISTING ON-SITE
BQ13EE	NUM	8	340	% LAND APP SHIFTED - INCIN ON-SITE
BQ13F	CHAR	1	348	INCINERATION OFF-SITE
BQ13FF	NUM	8	349	% LAND APP SHIFTED - INCIN OFF-SITE
BQ13G	CHAR	1	357	MONOFILL
BQ13GG	NUM	8	358	% LAND APP SHIFTED - MONOFILL
BQ13H	CHAR	1	366	SURFACE DISPOSAL
BQ13HH	NUM	8	367	% LAND APP SHIFTED - SURFACE DISPOSAL
BQ13I	CHAR	1	390	OTHER
BQ13II	NUM	8	391	OTHER
BQ13IOTH	CHAR	15	375	SPECIFY OTHER

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                    CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE TYPE   LENGTH POSITION      LABEL
BQ14     NUM         8      399      1988 O&M COSTS(LAND APP)
BQ2A     CHAR        1      114      AEROBIC DIGESTION
BQ2B     CHAR        1      115      AIR DRYING
BQ2C     CHAR        1      116      ANAEROBIC DIGESTION
BQ2D     CHAR        1      117      COMPOSTING: HEAT DRYING
BQ2E     CHAR        1      118      COMPOSTING: STATIC AERATED PILE
BQ2F     CHAR        1      119      COMPOSTING: WINDROW
BQ2G     CHAR        1      120      COMPOSTING: WITHIN VESSEL
BQ2H     CHAR        1      121      DEWATERING
BQ2I     CHAR        1      122      HEAT TREATMENT
BQ2J     CHAR        1      123      LIME ADDITION
BQ2K     CHAR        1      124      OTHER SLUDGE PROCESSING
BQ2KK    CHAR       15      125      SPECIFY OTHER PROCESS
BQ2L     CHAR        1      140      NONE
BQ3A     CHAR        3      141      COMPOSTED ON-SITE
BQ3B     NUM         8      144      COMPOSTED OFF-SITE
BQ3C     NUM         8      152      NOT COMPOSTED
BQ4A     CHAR        1      160      NOT APPLICABLE - NOT COMPOSTED
BQ4B     CHAR        1      161      BULKING PERFORMED
BQ4B1    CHAR       15      162      SPECIFY BULKING MATERIAL
BQ4B2    NUM         8      177      BULK AGENT: SLUDGE(VOL)
BQ4B3    NUM         8      185      BULK AGENT: SLUDGE(WT)
BQ5A     NUM         8      193      % AVAILABLE NITROGEN
BQ5B     NUM         8      201      % AVAILABLE PHOSPHORUS
BQ6      CHAR        1      209      LAND APP INITIATED AS END USE
BQ7A     CHAR        1      210      LAND APP REPLACED CO-DISPOSAL LANDFILL
BQ7B     CHAR        1      211      LAND APP REPLACED CO-INCINERATION
BQ7C     CHAR        1      212      LAND APP REPLACED D & M
BQ7D     CHAR        1      213      LAND APP REPLACED INCINERATION
BQ7E     CHAR        1      214      LAND APP REPLACED MONOFILL
BQ7F     CHAR        1      215      LAND APP REPLACED OCEAN DISPOSAL
BQ7G     CHAR        1      216      LAND APP REPLACED SURFACE DISPOSAL
BQ7H     CHAR        1      217      LAND APP REPLACED OTHER PRACTICE
BQ7HH    CHAR       15      218      SPECIFY OTHER PRACTICE
BQ8A     CHAR        1      233      WHY LAND APP-CHANGE IN WSTWTR TRTMNT TEC
BQ8B     CHAR        1      234      WHY LAND APP-COST OF PAST PRACTICE
BQ8C     CHAR        1      235      WHY LAND APP-INCREASED SLUDGE VOLUME
BQ8D     CHAR        1      236      WHY LAND APP-PERMIT CONDITIONS
BQ8E     CHAR        1      237      WHY LAND APP-PUBLIC CONCERN
BQ8F     CHAR        1      238      WHY LAND APP-REGULATORY REQUIREMENTS
BQ8G     CHAR        1      239      WHY LAND APP-RESTRICTED LANDFILL CAPACIT
BQ8H     CHAR        1      240      WHY LAND APP-OTHER REASON
BQ8HH    CHAR       15      241      SPECIFY OTHER REASON
BQ9      CHAR        1      256      PLANS TO SHIFT DISPOSAL PRACTICE:
EPISODE  CHAR        4       15      EPA EPISODE NUMBER
ST       CHAR        2        4      STATE POSTAL CODE
SURVEYID CHAR        9        6      SURVEY ID NUMBER
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0202

VARIABLE	TYPE	LENGTH	POSITION	LABEL
BQ15	CHAR	2	19	COPY #
BQ16A	CHAR	1	21	ANIMAL FEED CROP LAND(NOT PASTURE)
BQ16B	CHAR	1	22	DEDICATED LAND FOR SLUDGE DISPOSAL
BQ16C	CHAR	1	23	GOLF COURSES
BQ16D	CHAR	1	24	HUMAN FOOD CROP LAND(SPECIFY CROPS)
BQ16D1	CHAR	15	25	SPECIFY MAIN FOOD CROPS
BQ16D2	CHAR	15	40	SPECIFY MAIN FOOD CROPS
BQ16D3	CHAR	15	55	SPECIFY MAIN FOOD CROPS
BQ16E	CHAR	1	70	LAND RECLAMATION
BQ16F	CHAR	1	71	LANDSCAPE CONTRACTORS
BQ16G	CHAR	1	72	MUNICIPAL PARKS AND HIGHWAYS
BQ16H	CHAR	1	73	PASTURE LAND
BQ16I	CHAR	1	74	SILVICULTURE LAND
BQ16J	CHAR	1	75	OTHER LAND
BQ16JJ	CHAR	15	76	SPECIFY OTHER
BQ17A	NUM	8	91	AVERAGE TONS/ACRE/APP
BQ17B	NUM	8	99	AVERAGE ACRES PER APPLICATION
BQ17C	NUM	8	107	NUMBER OF APPLICATIONS IN 1988
BQ18	CHAR	2	115	APPLICATION BASED ON N AND P
BQ19	NUM	8	117	% OF SLUDGE COMPOSTED
BQ20A	CHAR	1	125	MUNICIPAL LAND
BQ20B	CHAR	1	126	POTW LAND
BQ20C	CHAR	1	127	PRIVATE PARTY LAND
BQ20D	CHAR	1	128	STATE LAND
BQ20E	CHAR	1	129	OTHER LAND
BQ20EE	CHAR	15	130	SPECIFY OTHER LAND
BQ21A	CHAR	1	145	INJECTION OF LIQUID SLUDGE
BQ21B	CHAR	1	146	SURFACE SPREADING OF LIQUID SLUDGE
BQ21C	CHAR	1	147	SURFACE SPREADING OF DEWATERED CAKE
BQ21D	CHAR	1	148	SPRAYING
BQ21E	CHAR	1	149	OTHER APPL METHOD
BQ21EE	CHAR	15	150	SPECIFY OTHER APPL METHOD
BQ22A	CHAR	1	165	APPLIED BY CONTRACTOR
BQ22B	CHAR	1	166	APPLIED BY FARMER OR CUSTOMER
BQ22C	CHAR	1	167	APPLIED BY MUNICIPAL EMPLOYEES
BQ22D	CHAR	1	168	APPLIED BY POTW PERSONNEL
BQ22E	CHAR	1	169	APPLIED BY OTHER PERSONNEL
BQ22EE	CHAR	15	170	SPECIFY OTHER PERSONNEL
BQ23A	CHAR	1	185	CONTROLLED BY INTER-AGENCY AGREEMENTS
BQ23B	CHAR	1	186	CONTROLLED BY WRITTEN CONTRACT
BQ23C	CHAR	1	187	CONTROLLED BY OTHER WRITTEN AGREEMENT
BQ23CC	CHAR	15	188	SPECIFY OTHER WRITTEN AGREEMENT
BQ23D	CHAR	1	203	CONTROLLED BY OTHER METHOD
BQ23DD	CHAR	15	204	SPECIFY OTHER METHOD
BQ23E	CHAR	1	219	NONE
BQ24	CHAR	1	220	SEWAGE INCORPORATED INTO THE SOIL
BQ24B1	CHAR	1	221	DISKING

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
BQ24B2	CHAR	1	222	INJECTION
BQ24B3	CHAR	1	223	MINIMUM TILL
BQ24B4	CHAR	1	224	PLOWING
BQ24B5	CHAR	1	225	OTHER METHOD OF INCORP
BQ24B55	CHAR	15	226	SPECIFY OTHER
BQ25	CHAR	1	241	LAND APPLICATION SITE(S) RESTRICTED
BQ25B1	CHAR	1	242	AGRICULTURAL WASTES DISPOSED
BQ25B2	CHAR	1	243	FOOD PROCESSING WASTES DISPOSED
BQ25B3	CHAR	1	244	HOLDING/SEPTIC TANK DISPOSED
BQ25B4	CHAR	1	245	INDUSTRIAL SLUDGES DISPOSED
BQ25B5	CHAR	1	246	INDUSTRIAL WASTES DISPOSED
BQ25B6	CHAR	1	247	SLUDGES FROM OTHER MUNICIP DISPOSED
BQ25B7	CHAR	1	248	OTHER SLUDGES/WASTES DISPOSED
BQ25B77	CHAR	15	249	SPECIFY OTHER SLUDGES/WASTES
BQ26A	CHAR	1	264	NO ACCESS RESTRICT
BQ26B	CHAR	1	265	FENCES - RESTRICT ACCESS
BQ26C	CHAR	1	266	SIGNS - RESTRICT ACCESS
BQ26D	CHAR	1	267	OTHER - RESTRICT ACCESS
BQ26DD	CHAR	15	268	SPECIFY OTHER RESTRICT. METHODS
BQ27	CHAR	1	283	MONITOR WELLS NEAR LAND APP
BQ28A	CHAR	1	284	NO - MGT PRACTICES
BQ28B	CHAR	1	285	BUFFER ZONE - MGT PRACTICES
BQ28C	CHAR	1	286	CONSERVATION TILLAGE - MGT
BQ28D	CHAR	1	287	MAXIMUM SLOPE REQUIREMENT - MGT PRACTICE
BQ28E	CHAR	1	288	SEDIMENT BASIN - MGT PRACTICES
BQ28F	CHAR	1	289	TERRACING/BERMING - MGT PRACTICES
BQ28G	CHAR	1	290	OTHER - MGT PRACTICES
BQ28GG	CHAR	15	291	SPECIFY OTHER - MGT PRACTICES
BQ29	CHAR	2	306	COULD RATES BE LOWERED
BQ30	NUM	8	308	MAXIMUM % REDUCTION FEASIBLE
BQ31A	CHAR	1	316	INCREASE ACRES OF LAND APP
BQ31B	CHAR	1	317	APPLY TO OTHER CATEGORIES
BQ31C	CHAR	1	318	PURSUE OTHER DISPOSAL PRACTICES
BQ31D	CHAR	1	319	OTHER
BQ31DD	CHAR	15	320	SPECIFY OTHER
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0301

VARIABLE	TYPE	LENGTH	POSITION	LABEL
CQ1A	NUM	8	19	% - COMPOST BROKERS/CONTRACTORS - D & M
CQ1B	NUM	8	27	% - FARMERS - D & M
CQ1C	NUM	8	35	% - GENERAL PUBLIC - D & M
CQ1D	NUM	8	43	% - GOLF COURSES - D & M
CQ1E	NUM	8	51	% - LANDSCAPE CONTRACTORS - D & M
CQ1F	NUM	8	59	% - MUNICIPALITIES - D & M
CQ1G	NUM	8	67	% - OTHER END USER - D & M
CQ1GG	CHAR	15	75	SPECIFY OTHER END USER - D & M
CQ1H	NUM	8	90	% - OTHER END USER - D & M
CQ1HH	CHAR	15	98	SPECIFY OTHER END USER - D & M
CQ10A	CHAR	1	258	WHY D & M - AS A PROFIT VENTURE
CQ10B	CHAR	1	259	WHY D & M - CHANGE IN WSTWTR TRTMNT TECH
CQ10C	CHAR	1	260	WHY D & M - COST OF MAINTAINING
CQ10D	CHAR	1	261	WHY D & M - INCREASED VOLUME
CQ10E	CHAR	1	262	WHY D & M - PERMIT CONDITIONS
CQ10F	CHAR	1	263	WHY D & M - PUBLIC CONCERN
CQ10G	CHAR	1	264	WHY D & M - REGULATORY REQUIREMENTS
CQ10H	CHAR	1	265	WHY D & M - RESTRICTED LANDFILL CAPACITY
CQ10I	CHAR	1	266	WHY D & M - OTHER REASON
CQ10II	CHAR	15	267	SPECIFY OTHER REASON
CQ11	CHAR	1	282	PLANS TO SHIFT PRACTICE:
CQ12A	CHAR	1	283	CO-DISPOSAL LANDFILL - D & M ALTER
CQ12B	CHAR	1	284	CO-INCINERATION - D & M ALTER
CQ12C	CHAR	1	285	INCINERATION - D & M ALTER
CQ12D	CHAR	1	286	LAND APPLICATION - D & M ALTER
CQ12E	CHAR	1	287	MONOFILL - D & M ALTER
CQ12F	CHAR	1	288	SURFACE DISPOSAL - D & M ALTER
CQ12G	CHAR	1	289	OTHER PRACTICE - D & M ALTER
CQ12GG	CHAR	15	290	SPECIFY OTHER PRACTICE
CQ13A	CHAR	1	305	CHANGE IN WSTWTR TREATMENT TECHNOLOGY
CQ13B	CHAR	1	306	WHY CHANGE - COST OF MAINTAINING D & M
CQ13C	CHAR	1	307	WHY CHANGE - LACK OF MARKETING KNOWLEDGE
CQ13D	CHAR	1	308	WHY CHANGE - LACK OF MARKETING OPPORTUN.
CQ13E	CHAR	1	309	WHY CHANGE - INCREASED SLUDGE VOLUME
CQ13F	CHAR	1	310	WHY CHANGE - PERMIT CONDITIONS
CQ13G	CHAR	1	311	WHY CHANGE - PUBLIC CONCERN
CQ13H	CHAR	1	312	WHY CHANGE - REGULATORY REQUIREMENTS
CQ13I	CHAR	1	313	OTHER
CQ13II	CHAR	15	314	SPECIFY OTHER
CQ14A	CHAR	1	329	CO-DISPOSAL AT EXISTING MUNIC. LANDFILL
CQ14AA	NUM	8	330	% D & M SHIFTED - CO-DISPOSAL
CQ14B	CHAR	1	338	CO-INCINERATION
CQ14BB	NUM	8	339	% D & M SHIFTED - CO-INCINERATION
CQ14C	CHAR	1	347	LAND APPLICATION
CQ14CC	NUM	8	348	% D & M SHIFTED - LAND APPLICATION
CQ14D	CHAR	1	356	INCINERATION - NEW, ON-SITE
CQ14DD	NUM	8	357	% D & M SHIFTED - INCIN - NEW, ON-SITE

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
CQ14E	CHAR	1	365	INCINERATION ON-SITE
CQ14EE	NUM	8	366	% D & M SHIFTED - INCINERATION ON-SITE
CQ14F	CHAR	1	374	INCINERATION OFF-SITE
CQ14FF	NUM	8	375	% D & M SHIFTED - INCINERATION OFF-SITE
CQ14G	CHAR	1	383	MONOFILL
CQ14GG	NUM	8	384	% D & M SHIFTED - MONOFILL
CQ14H	CHAR	1	392	SURFACE DISPOSAL
CQ14HH	NUM	8	393	% D & M SHIFTED - SURFACE DISPOSAL
CQ14I	CHAR	1	416	OTHER ALTERNATIVE
CQ14II	NUM	8	417	% D & M SHIFTED - OTHER ALTERNATIVE
CQ14IOTH	CHAR	15	401	SPECIFY OTHER ALTERNATIVE
CQ15	NUM	8	425	1988 O&M COSTS FOR D & M
CQ2A	CHAR	1	113	AEROBIC DIGESTION - PREP
CQ2B	CHAR	1	114	AIR DRYING - PREP
CQ2C	CHAR	1	115	ANAEROBIC DIGESTION - PREP
CQ2D	CHAR	1	116	COMPOSTING: HEAT DRYING
CQ2E	CHAR	1	117	COMPOSTING: STATIC AERATED PILE
CQ2F	CHAR	1	118	COMPOSTING: WINDROW
CQ2G	CHAR	1	119	COMPOSTING: WITHIN VESSEL
CQ2H	CHAR	1	120	DEWATERING
CQ2I	CHAR	1	121	HEAT TREATMENT
CQ2J	CHAR	1	122	LIME ADDITION
CQ2K	CHAR	1	123	OTHER - PREP
CQ2KK	CHAR	15	124	SPECIFY OTHER - PREP
CQ3A	CHAR	1	139	NOT APPLICABLE - NOT COMPOSTED
CQ3B	CHAR	1	140	BULKING PERFORMED
CQ3B1	CHAR	15	141	SPECIFY BULKING MATERIAL
CQ3B2	NUM	8	156	BULK AGENT: SLUDGE(VOL)
CQ3B3	NUM	8	164	BULK AGENT: SLUDGE(WT)
CQ4A	NUM	8	172	% AVAILABLE NITROGEN
CQ4B	NUM	8	180	% AVAILABLE PHOSPHORUS
CQ5	CHAR	1	188	PROVIDE WRITTEN INSTRUCTIONS
CQ5B1	CHAR	1	189	INSTRUCTIONS PROHIBIT END USES
CQ5B10	CHAR	1	198	OTHER
CQ5B100	CHAR	15	199	SPECIFY OTHER
CQ5B2	CHAR	1	190	INSTRUCTIONS CAUTION AGAINST END USES
CQ5B3	CHAR	1	191	INSTRUCTIONS SPECIFY ACCEPTABLE USES
CQ5B4	CHAR	1	192	INSTRUCTIONS SUGGEST QUANTITY
CQ5B5	CHAR	1	193	INSTRUCTIONS SUGGEST FREQUENCY
CQ5B6	CHAR	1	194	SPECIFICATIONS OF MICRONUTRIENTS
CQ5B7	CHAR	1	195	SPECIFICATIONS OF N & P
CQ5B8	CHAR	1	196	SPECIFICATIONS OF ACCEPTABLE pH
CQ5B9	CHAR	1	197	INDICATIONS DERIVED FROM SEWAGE SLUDGE
CQ6A	CHAR	1	214	GIVEN AWAY
CQ6B	CHAR	1	215	SOLD(INDICATE PRICE)
CQ6B1	NUM	8	216	PER DRY, U.S. TON
CQ6B2	NUM	8	224	PER CUBIC YARD
CQ7A	CHAR	1	232	BAGGED
CQ7B	CHAR	1	233	DISTRIBUTED IN BULK
CQ8	CHAR	1	234	D & M INITIATED AS END USE
CQ9A	CHAR	1	235	D & M REPLACED CO-DISPOSAL LANDFILL
CQ9B	CHAR	1	236	D & M REPLACED CO-INCINERATION
CQ9C	CHAR	1	237	D & M REPLACED INCINERATION
CQ9D	CHAR	1	238	D & M REPLACED LAND APPLICATION
CQ9E	CHAR	1	239	D & M REPLACED MONOFILL

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
CQ9F	CHAR	1	240	D & M REPLACED OCEAN DISPOSAL
CQ9G	CHAR	1	241	D & M REPLACED SURFACE DISPOSAL
CQ9H	CHAR	1	242	D & M REPLACED OTHER PRACTICE
CQ9HH	CHAR	15	243	SPECIFY OTHER PRACTICE
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

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                    CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

                              CONTENTS OF SAS MEMBER INDATA.S0401


VARIABLE TYPE   LENGTH POSITION     LABEL
DQ1A     NUM         8       19     ON-SITE INCINERATORS
DQ1B     NUM         8       27     OFF-SITE INCINERATORS
DQ1C     NUM         8       35     TOTAL NUMBER OF INCINERATORS
DQ2      CHAR        1       43     INITIATED IN PAST 5 YEARS?
DQ10     NUM         8      249     1988 O&M COSTS FOR INCINERATION
DQ3A     CHAR        1       44     INCIN REPLACED CO-DISPOSAL LANDFILL
DQ3B     CHAR        1       45     INCIN REPLACED CO-INCINERATION
DQ3C     CHAR        1       46     INCIN REPLACED DISTRIBUTION & MARKETING
DQ3D     CHAR        1       47     INCIN REPLACED LAND APPLICATION
DQ3E     CHAR        1       48     INCIN REPLACED MONOFILL
DQ3F     CHAR        1       49     INCIN REPLACED OCEAN DISPOSAL
DQ3G     CHAR        1       50     INCIN REPLACED SURFACE DISPOSAL
DQ3H     CHAR        1       51     INCIN REPLACED OTHER PRACTICE
DQ3HOTH  CHAR       15       52     OTHER PRACTICE
DQ4A     CHAR        1       67     WHY INCIN - CHANGE IN WSTWTR TRTMNT TECH
DQ4B     CHAR        1       68     WHY INCIN - COST OF PAST PRACTICE
DQ4C     CHAR        1       69     WHY INCIN - INCREASED SLUDGE
DQ4D     CHAR        1       70     WHY INCIN - PERMIT CONDITIONS
DQ4E     CHAR        1       71     WHY INCIN - PUBLIC CONCERN
DQ4F     CHAR        1       72     WHY INCIN - REGULATORY REQUIREMENTS
DQ4G     CHAR        1       73     WHY INCIN - RESTRICTED LANDFILL CAPACITY
DQ4H     CHAR        1       74     WHY INCIN - OTHER REASON
DQ4HOTH  CHAR       15       75     SPECIFY OTHER REASON
DQ5      CHAR        1       90     ANY PLANS SHIFT?
DQ6A     CHAR        1       91     CO-DISPOSAL LANDFILL - INCIN ALTER
DQ6B     CHAR        1       92     CO-INCINERATION - INCIN ALTER
DQ6C     CHAR        1       93     DISTRIBUTION & MARKETING - INCIN ALTER
DQ6D     CHAR        1       94     LAND APPLICATION - INCIN ALTER
DQ6E     CHAR        1       95     MONOFILL - INCIN ALTER
DQ6F     CHAR        1       96     SURFACE DISPOSAL - INCIN ALTER
DQ6G     CHAR        1       97     OTHER PRACTICE - INCIN ALTER
DQ6GOTH  CHAR       15       98     OTHER ALTERNATIVE DISPOSAL PRACTICE
DQ7A     CHAR        1      113     WHY INCIN - CHANGE IN WW TRTMNT TECH
DQ7B     CHAR        1      114     WHY INCIN - COST OF MAINTAINING INCIN
DQ7C     CHAR        1      115     WHY INCIN - INCREASED VOLUME
DQ7D     CHAR        1      116     WHY INCIN - PERMIT CONDITIONS
DQ7E     CHAR        1      117     WHY INCIN - PUBLIC CONCERN
DQ7F     CHAR        1      118     WHY INCIN - REGULATORY REQUIREMENTS
DQ7G     CHAR        1      119     WHY INCIN - OTHER REASON
DQ7GOTH  CHAR       15      120     OTHER REASON FOR PLAN CHANGE
DQ8A     CHAR        1      135     ADD PRETREATMENT
DQ8B     CHAR        1      136     ADD AIR POLLUTION CONTROL DEVICES
DQ8C     CHAR        1      137     IMPROVED INSTRUMENTATION
DQ8D     CHAR        1      138     OTHER CHANGES TO INCINERATOR
DQ8DOTH  CHAR       15      139     SPECIFY OTHER CHANGES TO INCINERATOR
DQ8E     CHAR        1      154     REDUCTION OF FEED RATE
DQ8F     CHAR        1      155     OTHER WAY TO REDUCE SLUDGE
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
DQ8FOTH	CHAR	15	156	SPECIFY OTHER WAY TO REDUCE SEW. SLUDGE
DQ9A	CHAR	1	171	CO-DISPOSAL AT EXISTING LANDFILL
DQ9AA	NUM	8	172	% INCIN SHIFTED - CO-DISPOSAL
DQ9B	CHAR	1	180	CO-INCINERATION
DQ9BB	NUM	8	181	% INCIN SHIFTED - CO-INCINERATION
DQ9C	CHAR	1	189	DISTRIBUTION AND MARKETING
DQ9CC	NUM	8	190	% INCIN SHIFTED - D & M
DQ9D	CHAR	1	198	LAND APPLICATION
DQ9DD	NUM	8	199	% INCIN SHIFTED - LAND APPLICATION
DQ9E	CHAR	1	207	MONOFILL
DQ9EE	NUM	8	208	% INCIN SHIFTED - MONOFILL
DQ9F	CHAR	1	216	SURFACE DISPOSAL
DQ9FF	NUM	8	217	% INCIN SHIFTED - SURFACE DISPOSAL
DQ9G	CHAR	1	240	OTHER
DQ9GG	NUM	8	241	% INCIN SHIFTED - SPECIFY OTHER
DQ9GOTH	CHAR	15	225	OTHER DISPOSAL ALTERNATIVE
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
DQ8FOTH	CHAR	15	156	SPECIFY OTHER WAY TO REDUCE SEW. SLUDGE
DQ9A	CHAR	1	171	CO-DISPOSAL AT EXISTING LANDFILL
DQ9AA	NUM	8	172	% INCIN SHIFTED - CO-DISPOSAL
DQ9B	CHAR	1	180	CO-INCINERATION
DQ9BB	NUM	8	181	% INCIN SHIFTED - CO-INCINERATION
DQ9C	CHAR	1	189	DISTRIBUTION AND MARKETING
DQ9CC	NUM	8	190	% INCIN SHIFTED - D & M
DQ9D	CHAR	1	198	LAND APPLICATION
DQ9DD	NUM	8	199	% INCIN SHIFTED - LAND APPLICATION
DQ9E	CHAR	1	207	MONOFILL
DQ9EE	NUM	8	208	% INCIN SHIFTED - MONOFILL
DQ9F	CHAR	1	216	SURFACE DISPOSAL
DQ9FF	NUM	8	217	% INCIN SHIFTED - SURFACE DISPOSAL
DQ9G	CHAR	1	240	OTHER
DQ9GG	NUM	8	241	% INCIN SHIFTED - SPECIFY OTHER
DQ9GOTH	CHAR	15	225	OTHER DISPOSAL ALTERNATIVE
EPISODE	CHAR	4	15	EPA EPISODE NUMBER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0402

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VARIABLE TYPE  LENGTH POSITION     LABEL
DQ11     CHAR       2       19     INCINERATOR #
DQ12     CHAR      40       21     NAME AND/OR INCINERATOR NUMBER
DQ13A    CHAR       1       61     INCINERATOR ON-SITE, AT THE POTW
DQ13B    CHAR       1       62     INCINERATOR OFF-SITE
DQ13B1   CHAR      40       63     FACILITY NAME
DQ13B2   CHAR      30      103     STREET ADDRESS
DQ13B3   CHAR      20      133     CITY, TOWN
DQ13B4   CHAR      15      153     COUNTY
DQ13B5   CHAR       2      168     STATE
DQ13B6   CHAR      10      170     ZIP CODE
DQ14     NUM        8      180     MOISTURE CONTENT OF SLUDGE
DQ14A    CHAR       1      188     MOISTURE CONTENT - TIMES PER HOUR
DQ14B    CHAR       1      189     MOISTURE CONTENT - TIMES PER DAY
DQ14C    CHAR       1      190     MOISTURE CONTENT - TIMES PER MONTH
DQ14D    CHAR       1      191     MOISTURE CONTENT - TIMES PER YEAR
DQ15     NUM        8      192     VOLATILE SOLIDS/OF SLUDGE
DQ15A    CHAR       1      200     VOLATILE SOLIDS - TIMES PER HOUR
DQ15B    CHAR       1      201     VOLATILE SOLIDS - TIMES PER DAY
DQ15C    CHAR       1      202     VOLATILE SOLIDS - TIMES PER MONTH
DQ15D    CHAR       1      203     VOLATILE SOLIDS - TIMES PER YEAR
DQ16A1   CHAR       1      204     INCIN TYPE - ELECTRIC FURNACE
DQ16A2   CHAR       1      205     INCIN TYPE - FLUID BED
DQ16A3   CHAR       1      206     INCIN TYPE - MULTIPLE HEARTH
DQ16A4   CHAR       1      207     INCIN TYPE - ROTARY KILN
DQ16A5   CHAR       1      208     INCIN TYPE - OTHER TYPE
DQ16A55  CHAR      15      209     SPECIFY OTHER TYPE
DQ16B    NUM        8      224     RATED CAPACITY
DQ16C    NUM        8      232     ANNUAL THROUGHPUT
DQ16D    NUM        8      240     AGE OF INCIN
DQ16E    NUM        8      248     # OF DAYS INCIN OPERATED IN 1988
DQ16F    NUM        8      256     % VOLATILE SOLIDS OF SLUDGE FEED
DQ16G    NUM        8      264     % MOISTURE CONTENT OF SLUDGE FEED
DQ17A    CHAR       1      272     MONITORS - CARBON MONOXIDE IN FLUE GAS
DQ17AA   CHAR       1      273     RECORDERS - CARBON MONOXIDE IN FLUE GAS
DQ17B    CHAR       1      274     MONITORS - COMBUSTION AIR OXYGEN
DQ17BB   CHAR       1      275     RECORDERS - COMBUSTION AIR OXYGEN
DQ17C    CHAR       1      276     MONITORS - COMBUSTION TEMPERATURE
DQ17CC   CHAR       1      277     RECORDERS - COMBUSTION TEMPERATURE
DQ17D    CHAR       1      278     MONITORS - FURNACE DRAFT
DQ17DD   CHAR       1      279     RECORDERS - FURNACE DRAFT
DQ17E    CHAR       1      280     MONITORS - PRESSURE DROP OF SCRUBBER
DQ17EE   CHAR       1      281     RECORDERS - PRESSURE DROP OF SCRUBBER
DQ17F    CHAR       1      282     MONITORS - SLUDGE FEED RATE
DQ17FF   CHAR       1      283     RECORDERS - SLUDGE FEED RATE
DQ17G    CHAR       1      284     MONITORS - STACK TEMPERATURE
DQ17GG   CHAR       1      285     RECORDERS - STACK TEMPERATURE
DQ17H    CHAR       1      286     MONITORS - HYDROCARBONS IN FLUE GAS
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CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
DQ17HH	CHAR	1	287	RECORDERS - HYDROCARBONS IN FLUE GAS
DQ17I	CHAR	1	303	OTHER MONITORS
DQ17IA	CHAR	15	288	SPECIFY OTHER DEVICES
DQ17II	CHAR	1	304	OTHER CONTINUOUS RECORDERS
DQ18A	CHAR	1	305	NO BAGHOUSE OR FABRIC FILTER
DQ18B	CHAR	1	306	BAGHOUSE OR FABRIC FILTER
DQ18C	CHAR	1	307	DRY ELECTROSTATIC PRECIPITATOR
DQ18D	CHAR	1	308	WET ELECTROSTATIC PRECIPITATOR
DQ19A	CHAR	1	309	DRY CYCLONE
DQ19AA	NUM	8	310	DRY CYCLONE(INCHES)
DQ19B	CHAR	1	318	IMPINGER
DQ19BB	NUM	8	319	IMPINGER(INCHES)
DQ19C	CHAR	1	327	SPRAY CHAMBER
DQ19CC	NUM	8	328	SPRAY CHAMBER(INCHES)
DQ19D	CHAR	1	336	VENTURI
DQ19DD	NUM	8	337	VENTURI(INCHES)
DQ19E	CHAR	1	345	VENTURI/IMPINGER
DQ19EE	NUM	8	346	VENTURI/IMPINGER(INCHES)
DQ19F	CHAR	1	354	VENTURI/PACKED TOWER
DQ19FF	NUM	8	355	VENTURI/PACKED TOWER(INCHES)
DQ19G	CHAR	1	363	WET CYCLONE
DQ19GG	NUM	8	364	WET CYCLONE(INCHES)
DQ19H	CHAR	1	372	WET CYCLONE/IMPINGER
DQ19HH	NUM	8	373	WET CYCLONE/IMPINGER(INCHES)
DQ19I	CHAR	1	381	OTHER CONTROL SYSTEM
DQ19II	NUM	8	382	OTHER CONTROL SYSTEM(INCHES)
DQ19IOTH	CHAR	15	390	SPECIFY OTHER CONTROL SYSTEM
DQ19J	CHAR	1	405	NONE
DQ20	CHAR	1	406	PLANS TO UPGRADE AIR POLLUTION CONTROL
DQ21A	CHAR	1	407	ADD BAGHOUSE OR FABRIC FILTER
DQ21B	CHAR	1	408	ADD DRY CYCLONE
DQ21C	CHAR	1	409	ADD DRY ELECTROSTATIC PRECIPITATOR
DQ21D	CHAR	1	410	ADD IMPINGER
DQ21E	CHAR	1	411	ADD SPRAY CHAMBER
DQ21F	CHAR	1	412	ADD VENTURI
DQ21G	CHAR	1	413	ADD VENTURI/IMPINGER
DQ21H	CHAR	1	414	ADD VENTURI/PACKED TOWER
DQ21I	CHAR	1	415	ADD WET CYCLONE
DQ21J	CHAR	1	416	ADD WET CYCLONE/IMPINGER
DQ21K	CHAR	1	417	ADD WET ELECTROSTATIC PRECIPITATOR
DQ21L	CHAR	1	418	ADD OTHER AIR POLLUTION CONTROL SYSTEM
DQ21LL	CHAR	15	419	SPECIFY OTHER CONTROL SYSTEM
DQ22A	CHAR	1	434	NO AFTERBURNER
DQ22B	CHAR	1	435	AFTERBURNER WITH HEAT EXCHANGER
DQ22C	CHAR	1	436	AFTERBURNER WITHOUT HEAT EXCHANGER
DQ23A	NUM	8	437	STACK ID NUMBER
DQ23B	NUM	8	445	HEIGHT IN FEET
DQ23C	NUM	8	453	EXIT INSIDE DIAMETER IN FEET
DQ23D	NUM	8	461	EXIT TEMPERATURE OF FLUE GASES
DQ23E	NUM	8	469	EXIT VELOCITY OF FLUE GASES IN FT/SEC
DQ23F1	CHAR	2	477	OTHER INCINERATOR
DQ23F2	CHAR	2	479	OTHER INCINERATOR
DQ23F3	CHAR	2	481	OTHER INCINERATOR
DQ23F4	CHAR	2	483	OTHER INCINERATOR
DQ24A	NUM	8	485	LENGTH(FT) OF NEAREST BUILDING

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                 CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE TYPE   LENGTH POSITION     LABEL
DQ24B    NUM         8      493     WIDTH(FT) OF NEAREST BUILDING
DQ24C    CHAR        3      501     HEIGHT(FT) OF NEAREST BUILDING
DQ24D    NUM         8      504     DISTANCE FROM THE STACK(FT)
DQ25     CHAR        1      512     ASH PARTICULATES CONTROLLED
DQ25B    CHAR       15      513     SPECIFY
DQ26A    CHAR        1      528     DISPOSED AT CO-DISPOSAL LANDFILL
DQ26B    CHAR        1      529     DISPOSED AT METAL EXTRACTION PROCESSING
DQ26C    CHAR        1      530     DISPOSED AT RECYCLING(e.g.MAKING BRICKS)
DQ26D    CHAR        1      531     DISPOSED AT STORAGE LAGOON
DQ26E    CHAR        1      532     DISPOSED AT WASTE PILE
DQ26F    CHAR        1      533     DISPOSED AT OTHER LOCATION
DQ26FF   CHAR       15      534     SPECIFY OTHER LOCATION
EPISODE  CHAR        4       15     EPA EPISODE NUMBER
ST       CHAR        2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
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              CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

                       CONTENTS OF SAS MEMBER INDATA.S0501



VARIABLE TYPE   LENGTH POSITION     LABEL
EPISODE  CHAR        4       15     EPA EPISODE NUMBER
EQ1      NUM         8       19     # MONOFILLS
EQ10A    CHAR        1      141     CO-DISPOSAL
EQ10APER NUM         8      142     % MONOFILL SHIFTED - CO-DISPOSAL
EQ10B    CHAR        1      150     CO-INCINERATION
EQ10BPER NUM         8      151     % MONOFILL SHIFTED - CO-INCINERATION
EQ10C    CHAR        1      159     DISTRIBUTION & MARKETING
EQ10CPER NUM         8      160     % MONOFILL SHIFTED - D & M
EQ10D    CHAR        1      168     INCINERATION NEW-ON-SITE
EQ10DPER NUM         8      169     % MONOFILL SHIFTED - NEW-ON-SITE
EQ10E    CHAR        1      177     INCINERATION ON-SITE
EQ10EPER NUM         8      178     % MONOFILL SHIFTED - ON-SITE
EQ10F    CHAR        1      186     INCINERATION OFF-SITE
EQ10FPER NUM         8      187     % MONOFILL SHIFTED - OFF-SITE
EQ10G    CHAR        1      195     LAND APPLICATION
EQ10GPER NUM         8      196     % MONOFILL SHIFTED - LAND APP
EQ10H    CHAR        1      204     SURFACE DISPOSAL
EQ10HPER NUM         8      205     % MONOFILL SHIFTED - SURFACE DISPOSAL
EQ10I    CHAR        1      228     OTHER ALTERNATIVE
EQ10IOTH CHAR       15      213     SPECIFY OTHER ALTERNATIVE
EQ10IPER NUM         8      229     % MONOFILL SHIFTED - OTHER ALTERNATIVE
EQ2      CHAR        1       27     MONOFILLING INITIATED IN LAST 5 YEARS?
EQ11     NUM         8      237     COSTS FOR MONOFILL
EQ3A     CHAR        1       28     REPLACED BY CO-DISPOSAL LANDFILL
EQ3B     CHAR        1       29     REPLACED BY CO-INCINERATION
EQ3C     CHAR        1       30     REPLACED BY DISTRIBUTION & MARKETING
EQ3D     CHAR        1       31     REPLACED BY INCINERATION
EQ3E     CHAR        1       32     REPLACED BY LAND APPLICATION
EQ3F     CHAR        1       33     REPLACED BY OCEAN DISPOSAL
EQ3G     CHAR        1       34     REPLACED BY SURFACE DISPOSAL
EQ3H     CHAR        1       35     REPLACED BY OTHER PRACTICE
EQ3HOTH  CHAR       15       36     OTHER PRACTICE
EQ4A     CHAR        1       51     WHY MONOFILL - CHANGE IN WW TRTMNT TECH
EQ4B     CHAR        1       52     WHY MONOFILL - COST OF MAINTAINING
EQ4C     CHAR        1       53     WHY MONOFILL - INCREASED SLUDGE VOLUME
EQ4D     CHAR        1       54     WHY MONOFILL - PERMIT CONDITIONS
EQ4E     CHAR        1       55     WHY MONOFILL - PUBLIC CONCERN
EQ4F     CHAR        1       56     WHY MONOFILL - REGULATORY REQUIREMENTS
EQ4G     CHAR        1       57     WHY MONOFILL - RESTRICTED LANDFILL CAP
EQ4H     CHAR        1       58     WHY MONOFILL - OTHER REASON
EQ4HOTH  CHAR       15       59     OTHER REASON FOR MONOFILLS
EQ5      CHAR        1       74     SHIFT TO OTHER ALTERNATIVE?
EQ6A     CHAR        1       75     CO-DISPOSAL LANDFILL - MONOFILL ALTER
EQ6B     CHAR        1       76     CO-INCINERATION - MONOFILL ALTER
EQ6C     CHAR        1       77     D & M - MONOFILL ALTER
EQ6D     CHAR        1       78     INCINERATION - MONOFILL ALTER
EQ6E     CHAR        1       79     LAND APPLICATION - MONOFILL ALTER
```

```
                    CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE TYPE   LENGTH POSITION     LABEL
EQ6F     CHAR        1       80     SURFACE DISPOSAL MONOFILL ALTER
EQ6G     CHAR        1       81     OTHER PRACTICE - MONOFILL ALTER
EQ6GOTH  CHAR       15       82     OTHER PRACTICES
EQ7A     CHAR        1       97     WHY CHANGE - CHANGE IN WW TRTMNT TECH
EQ7B     CHAR        1       98     WHY CHANGE - COST OF MAINTAINING
EQ7C     CHAR        1       99     WHY CHANGE - INCREASED SLUDGE VOLUME
EQ7D     CHAR        1      100     WHY CHANGE - PERMIT CONDITIONS
EQ7E     CHAR        1      101     WHY CHANGE - PUBLIC CONCERN
EQ7F     CHAR        1      102     WHY CHANGE - REGULATORY REQUIREMENTS
EQ7G     CHAR        1      103     WHY CHANGE - RESTRICT. MONOFILL CAPACITY
EQ7H     CHAR        1      104     WHY CHANGE - OTHER REASON
EQ7HOTH  CHAR       15      105     OTHER REASON FOR PLAN CHANGE
EQ8A     CHAR        1      120     NO CURRENT RELEASES OF POLLUTANTS
EQ8B     CHAR        1      121     LINER & LEACHATE COLLECTION
EQ8C     CHAR        1      122     PRETREATMENT REQUIREMENTS
EQ8D     CHAR        1      123     INSTALLATION OF RUNON/RUNOFF CONTROLS
EQ8E     CHAR        1      124     OTHER POLLTANT CONTROLS
EQ8EOTH  CHAR       15      125     OTHER TREATMENT CONTROL
EQ9      CHAR        1      140     ACCESS TO MORE SPACE
ST       CHAR        2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
```

```
                  CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

                            CONTENTS OF SAS MEMBER INDATA.S0502


VARIABLE TYPE   LENGTH POSITION      LABEL
EPISODE  CHAR      4       15        EPA EPISODE NUMBER
EQ12     NUM       8       19        MONOFILL NUMBER
EQ13     CHAR     15       27        NAME OR # OF MONOFILL
EQ14A    CHAR      1       42        POTW OWNS MONOFILL
EQ14B    CHAR      1       43        OTHER POTW OWNS MONOFILL
EQ14C    CHAR      1       44        MUNICIPALITY OWNS MONOFILL
EQ14D    CHAR      1       45        PRIVATE PARTY OWNS MONOFILL
EQ14E    CHAR      1       46        STATE OWNS MONOFILL
EQ14F    CHAR      1       47        OTHER OWNER OF MONOFILL
EQ14FOTH CHAR     15       48        SPECIFY OTHER OWNER
EQ15A    CHAR      1       63        YOUR POTW OPERATES
EQ15B    CHAR      1       64        OTHER POTW OPERATES
EQ15C    CHAR      1       65        MUNICIPALITY OPERATES
EQ15D    CHAR      1       66        PRIVATE PARTY OPERATES
EQ15E    CHAR      1       67        STATE OPERATES
EQ15F    CHAR      1       68        OTHER OPERATOR
EQ15FOTH CHAR     15       69        SPECIFY OTHER
EQ16A    CHAR      1       84        % SOLIDS REQUIREMENT
EQ16B    CHAR      1       85        % SOLIDS
EQ16B1   NUM       8       86        % REQUIRED OF SOLIDS(GREATER THAN)
EQ17     CHAR      1       94        TIPPING FEE FOR DISPOSAL
EQ17B1   NUM       8       95        TIPPING FEE UNIT - PER TON
EQ17B2   NUM       8      103        TIPPING FEE UNIT - PER CUBIC YARD
EQ18A    NUM       8      111        DISTANCE(MILES) TO MONOFILL
EQ18B    CHAR      1      119        CHECK IF MONOFILL IS ON-SITE
EQ19A    CHAR      1      120        INDEPENDENT CONTRACTOR TRANSPORT
EQ19B    CHAR      1      121        MONOFILL OWNER TRANSPORT
EQ19C    CHAR      1      122        POTW TRANSPORT
EQ19D    CHAR      1      123        OTHER TRANSPORT
EQ19DOTH CHAR     15      124        SPECIFY OTHER TRANSPORT
EQ20A    CHAR      1      139        COVER PRACTICES - CONTROL
EQ20B    CHAR      1      140        LEACHATE COLLECTION SYSTEMS
EQ20C    CHAR      1      141        LEACHATE TREATMENT SYSTEMS
EQ20D    CHAR      1      142        LINERS, NATURAL
EQ20E    CHAR      1      143        LINERS, SYNTHETIC
EQ20F    CHAR      1      144        METHANE CONTROLS
EQ20G    CHAR      1      145        MONITORING WELLS
EQ20H    CHAR      1      146        RUNON/RUNOFF CONTROLS
EQ20I    CHAR      1      147        NO CONTROLS
EQ20J    CHAR      1      148        OTHER DISCHARGE
EQ20JOTH CHAR     15      149        SPECIFY OTHER DISCHARGE
EQ21A    CHAR      1      164        NO KNOWN GROUNDWATER SOURCE BELOW
EQ21B    CHAR      1      165        MONOFILL IS LOCATED IN GROUNDWATER
EQ21C    CHAR      1      166        0 TO 0.5 METERS
EQ21D    CHAR      1      167        0.6 TO 2 METERS
EQ21E    CHAR      1      168        2.1 TO 8 METERS
EQ21F    CHAR      1      169        8.1 TO 12 METERS
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
EQ21G	CHAR	1	170	GREATER THAN 12 METERS
EQ22	NUM	8	171	TIME(YRS) FOR DISPOSAL USE
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0601

```
VARIABLE TYPE   LENGTH POSITION     LABEL
EPISODE  CHAR        4       15     EPA EPISODE NUMBER
FQ1      NUM         8       19     # OF CO-DISPOSAL LANDFILLS
FQ2      CHAR        1       27     CO-DISPOSAL LANDFILL INITIATED IN 5 YRS
FQ3A     CHAR        1       28     REPLACED BY DISTRIBUTION AND MARKETING
FQ3B     CHAR        1       29     REPLACED BY CO-INCINERATION
FQ3C     CHAR        1       30     REPLACED BY INCINERATION
FQ3D     CHAR        1       31     REPLACED BY LAND APPLICATION
FQ3E     CHAR        1       32     REPLACED BY MONOFILL
FQ3F     CHAR        1       33     REPLACED BY OCEAN DISPOSAL
FQ3G     CHAR        1       34     REPLACED BY SURFACE DISPOSAL
FQ3H     CHAR        1       35     REPLACED BY OTHER PRACTICE
FQ3HH    CHAR       15       36     SPECIFY OTHER PRACTICE
FQ4A     CHAR        1       51     WHY LANDFILL - CHANGE IN WW TRTMNT TECH
FQ4B     CHAR        1       52     WHY LANDFILL - COST OF PAST PRACTICE
FQ4C     CHAR        1       53     WHY LANDFILL - INCREASED VOLUME
FQ4D     CHAR        1       54     WHY LANDFILL - PERMIT CONDITIONS
FQ4E     CHAR        1       55     WHY LANDFILL - PUBLIC CONCERN
FQ4F     CHAR        1       56     WHY LANDFILL - REGULATORY REQUIREMENTS
FQ4G     CHAR        1       57     WHY LANDFILL - RESTR MONOFILL CAPAC
FQ4H     CHAR        1       58     WHY LANDFILL - OTHER REASON
FQ4HH    CHAR       15       59     SPECIFY OTHER REASON
FQ5      CHAR        1       74     PLANS UNDERWAY TO SHIFT
FQ6A     CHAR        1       75     D & M - LANDFILL ALTER
FQ6B     CHAR        1       76     CO-INCINERATION - LANDFILL ALTER
FQ6C     CHAR        1       77     INCINERATION - LANDFILL ALTER
FQ6D     CHAR        1       78     LAND APPLICATION - LANDFILL ALTER
FQ6E     CHAR        1       79     MONOFILL - LANDFILL ALTER
FQ6F     CHAR        1       80     SURFACE DISPOSAL - LANDFILL ALTER
FQ6G     CHAR        1       81     OTHER PRACTICE - LANDFILL ALTER
FQ6GG    CHAR       15       82     SPECIFY OTHER PRACTICE
FQ7A     CHAR        1       97     WHY CHANGE - CHANGE IN WW TRTMNT TECH
FQ7B     CHAR        1       98     WHY CHANGE - COST OF MAINTAINING
FQ7C     CHAR        1       99     WHY CHANGE - INCREASED VOLUME
FQ7D     CHAR        1      100     WHY CHANGE - PERMIT CONDITIONS
FQ7E     CHAR        1      101     WHY CHANGE - PUBLIC CONCERN
FQ7F     CHAR        1      102     WHY CHANGE - REGULATORY REQUIREMENTS
FQ7G     CHAR        1      103     WHY CHANGE - RESTR LANDFILL CAPACITY
FQ7H     CHAR        1      104     WHY CHANGE - OTHER REASON
FQ7HH    CHAR       15      105     SPECIFY OTHER REASON
FQ8      CHAR        1      120     SECURING ADDITIONAL LANDFILL SPACE?
FQ9      NUM         8      121     1988 O&M COSTS CO-DISPOSAL LANDFILL
ST       CHAR        2        4     STATE POSTAL CODE
SURVEYID CHAR        9        6     SURVEY ID NUMBER
```

```
CONTENTS NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

         CONTENTS OF SAS MEMBER INDATA.S0602


VARIABLE TYPE   LENGTH POSITION     LABEL
EPISODE  CHAR       4       15      EPA EPISODE NUMBER
FQ10     CHAR       2       19      CO-DISPOSAL LANDFILL #
FQ11     CHAR      15       21      NAME/# CO-DISPOSAL LANDFILL
FQ12A    CHAR       1       36      YOUR POTW OWNS LANDFILL
FQ12B    CHAR       1       37      OTHER POTW OWNS LANDFILL
FQ12C    CHAR       1       38      MUNICIPALITY OWNS LANDFILL
FQ12D    CHAR       1       39      PRIVATE PARTY OWNS LANDFILL
FQ12E    CHAR       1       40      STATE OWNS LANDFILL
FQ12F    CHAR       1       41      OTHER PARTY OWNS LANDFILL
FQ12FF   CHAR      15       42      SPECIFY OTHER OWNER
FQ13A    CHAR       1       57      YOUR POTW OPERATES LANDFILL
FQ13B    CHAR       1       58      OTHER POTW OPERATES LANDFILL
FQ13C    CHAR       1       59      MUNICIPALITY OPERATES LANDFILL
FQ13D    CHAR       1       60      PRIVATE PARTY OPERATES LANDFILL
FQ13E    CHAR       1       61      STATE OPERATES LANDFILL
FQ13F    CHAR       1       62      OTHER PARTY OPERATES LANDFILL
FQ13FF   CHAR      15       63      SPECIFY OTHER OPERATOR
FQ14A    CHAR       1       78      NO REQUIREMENTS - % SOLIDS
FQ14B    CHAR       1       79      REQUIREMENTS - % SOLIDS
FQ14BB   NUM        8       80      % GREATER THAN SOLIDS
FQ15     CHAR       1       88      REQUIREMENTS
FQ15B1   NUM        8       89      TIPPING FEE(PER TON)
FQ15B2   NUM        8       97      TIPPING FEE(PER CUBIC YARD)
FQ16     NUM        8      105      MILES(ONE-WAY)
FQ17A    CHAR       1      113      INDEPENDENT CONTRACTOR - TRANSPORT
FQ17B    CHAR       1      114      CO-DISPOSAL LANDFILL OWNER - TRANSPORT
FQ17C    CHAR       1      115      POTW - TRANSPORT
FQ17D    CHAR       1      116      OTHER - TRANSPORT
FQ17DD   CHAR      15      117      SPECIFY OTHER - TRANSPORT
FQ18A    CHAR       1      132      EMPTIED INTO TRENCHES AND BURIED
FQ18B    CHAR       1      133      MIXED WITH MUNICIPAL WASTE AND BURIED
FQ18C    CHAR       1      134      SEWAGE SLUDGE IS USED AS TOP COVER
FQ18D    CHAR       1      135      OTHER METHOD
FQ18DD   CHAR      15      136      SPECIFY OTHER METHOD
FQ19A    CHAR       1      151      COVER PRACTICES
FQ19B    CHAR       1      152      LEACHATE COLLECTION SYSTEMS
FQ19C    CHAR       1      153      LEACHATE TREATMENT SYSTEMS
FQ19D    CHAR       1      154      LINERS, NATURAL
FQ19E    CHAR       1      155      LINERS, SYNTHETIC
FQ19F    CHAR       1      156      METHANE CONTROL
FQ19G    CHAR       1      157      MONITORING WELLS
FQ19H    CHAR       1      158      RUNON/RUNOFF CONTROLS
FQ19I    CHAR       1      159      NO CONTROLS
FQ19J    CHAR       1      160      OTHER CONTROLS
FQ19JJ   CHAR      15      161      SPECIFY OTHER CONTROL
FQ20A    CHAR       1      176      ACCESS RESTRICT
FQ20B    CHAR       1      177      FENCES RESTRICT
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
FQ20C	CHAR	1	178	SIGNS RESTRICT
FQ20D	CHAR	1	179	OTHER RESTRICT
FQ20DD	CHAR	15	180	SPECIFY OTHER RESTRICTIONS
FQ21	NUM	8	195	TIME(YRS) FOR DISPOSAL USE
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0701

```
VARIABLE TYPE  LENGTH POSITION     LABEL
EPISODE  CHAR       4       15     EPA EPISODE NUMBER
GQ1      CHAR       1       19     12 MILE SITE (IN 1987)?
GQ2A     NUM        8       20     DISCHARGE RATE(TONS/HR,DRY WT)
GQ2B     NUM        8       28     TOTAL DISCHARGE (12 MILE SITE)
GQ3      CHAR       1       36     WAS SEWAGE SLUD. "POOLED"?
GQ3B11   CHAR      40       37     NAME
GQ3B12   CHAR      20       77     CITY
GQ3B13   CHAR       2       97     STATE
GQ3B21   CHAR      40       99     NAME
GQ3B22   CHAR      20      139     CITY
GQ3B23   CHAR       2      159     STATE
GQ3B31   CHAR      40      161     NAME
GQ3B32   CHAR      20      201     CITY
GQ3B33   CHAR       2      221     STATE
GQ3B41   CHAR      40      223     NAME
GQ3B42   CHAR      20      263     CITY
GQ3B43   CHAR       2      283     STATE
GQ3B51   CHAR      40      285     NAME
GQ3B52   CHAR      20      325     CITY
GQ3B53   CHAR       2      345     STATE
GQ4      NUM        8      347     HOW MANY MILES FROM OCEAN SHIP PT?
GQ5      NUM        8      355     1987 O&M COSTS FOR 12 MILE SITE
GQ6      CHAR       1      363     12 MILE TO 106 MILE SITE?
GQ6BPER  NUM        8      364     % AT 12-MS IN 87 DISP. AT 106-MS IN 88
GQ7      NUM        8      372     O&M COSTS PER TON
GQ8      CHAR       1      380     106-MS USED IN 88?
GQ9      NUM        8      381     DISCHARGE RATE AT 106-MS(DRY WT)?
ST       CHAR       2        4     STATE POSTAL CODE
SURVEYID CHAR       9        6     SURVEY ID NUMBER
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

CONTENTS OF SAS MEMBER INDATA.S0702

```
VARIABLE TYPE   LENGTH POSITION      LABEL
EPISODE  CHAR        4       15      EPA EPISODE NUMBER
GQ10     CHAR        1       19      WAS SEWAGE SLUD. "POOLED"?
GQ10B11  CHAR       40       20      NAME
GQ10B12  CHAR       20       60      CITY
GQ10B13  CHAR        2       80      STATE
GQ10B21  CHAR       40       82      NAME
GQ10B22  CHAR       20      122      CITY
GQ10B23  CHAR        2      142      STATE
GQ10B31  CHAR       40      144      NAME
GQ10B32  CHAR       20      184      CITY
GQ10B33  CHAR        2      204      STATE
GQ10B41  CHAR       40      206      NAME
GQ10B42  CHAR       20      246      CITY
GQ10B43  CHAR        2      266      STATE
GQ10B51  CHAR       40      268      NAME
GQ10B52  CHAR       20      308      CITY
GQ10B53  CHAR        2      328      STATE
GQ11     NUM         8      330      HOW MANY MILES FROM OCEAN SHIP PT?
GQ12     NUM         8      338      1988 O&M COSTS FOR 106 MILE SITE
GQ13     CHAR        1      346      WAS 12-MS/106-MS INITIATED IN 5 YRS?
GQ14A    CHAR        1      347      REPLACED BY CO-DISPOSAL LANDFILL
GQ14B    CHAR        1      348      REPLACED BY CO-INCINERATION
GQ14C    CHAR        1      349      REPLACED BY DISTRIBUTION & MARKETING
GQ14D    CHAR        1      350      REPLACED BY INCINERATION
GQ14E    CHAR        1      351      REPLACED BY LAND APPLICATION
GQ14F    CHAR        1      352      REPLACED BY MONOFILL
GQ14G    CHAR        1      353      REPLACED BY SURFACE DISPOSAL
GQ14H    CHAR        1      354      REPLACED BY OTHER PRACTICE
GQ14HOTH CHAR       15      355      SPECIFY OTHER PRACTICE
GQ15A    CHAR        1      370      WHY OCEAN DISP - CHANGE IN WW TRTMNT TEC
GQ15B    CHAR        1      371      WHY OCEAN DISP - COST OF MAINTAINING
GQ15C    CHAR        1      372      WHY OCEAN DISP - INCREASED VOLUME
GQ15D    CHAR        1      373      WHY OCEAN DISP - PERMIT CONDITIONS
GQ15E    CHAR        1      374      WHY OCEAN DISP - PUBLIC CONCERN
GQ15F    CHAR        1      375      WHY OCEAN DISP - REGULATORY REQUIREMENTS
GQ15G    CHAR        1      376      WHY OCEAN DISP - RESTR LANDFILL CAPACITY
GQ15H    CHAR        1      377      WHY OCEAN DISP - OTHER REASON
GQ15HOTH CHAR       15      378      OTHER REASON POTW INITIATED OCEAN DISP
GQ16     CHAR        1      393      SHIFT FROM OCEAN DISP. TO ALTERNATE DIS?
GQ17A    CHAR        1      394      CHANGE TO CO-DISPOSAL LANDFILL
GQ17B    CHAR        1      395      CHANGE TO CO-INCINERATION
GQ17C    CHAR        1      396      CHANGE TO DISTRIBUTION & MARKETING
GQ17D    CHAR        1      397      CHANGE TO INCINERATION
GQ17E    CHAR        1      398      CHANGE TO LAND APPLICATION
GQ17F    CHAR        1      399      CHANGE TO MONOFILL
GQ17G    CHAR        1      400      CHANGE TO SURFACE DISPOSAL
GQ17H    CHAR        1      401      CHANGE TO OTHER PRACTICE
```

CONTENTS OF NATIONAL SEWAGE SLUDGE SURVEY SAS DATABASE

VARIABLE	TYPE	LENGTH	POSITION	LABEL
GQ17HOTH	CHAR	15	402	SPECIFY OTHER PRACTICE
GQ18A	CHAR	1	417	WHY CHANGE - CHANGE IN WW TRTMNT TECH
GQ18B	CHAR	1	418	WHY CHANGE - COST OF MAINTAINING
GQ18C	CHAR	1	419	WHY CHANGE - INCREASED VOLUME
GQ18D	CHAR	1	420	WHY CHANGE - PERMIT CONDITIONS
GQ18E	CHAR	1	421	WHY CHANGE - PUBLIC CONCERN
GQ18F	CHAR	1	422	WHY CHANGE - REGULATORY REQUIREMENTS
GQ18G	CHAR	1	423	WHY CHANGE - OTHER REASON
GQ18GOTH	CHAR	15	424	OTHER REASON
GQ19A	CHAR	1	439	CO-DISPOSAL AT LANDFILL
GQ19APER	NUM	8	440	% OCEAN DISP SHIFTED - CO-DISPOSAL
GQ19B	CHAR	1	448	CO-INCINERATION
GQ19BPER	NUM	8	449	% OCEAN DISP SHIFTED - CO-INCINERATION
GQ19C	CHAR	1	457	DISTRIBUTION & MARKETING
GQ19CPER	NUM	8	458	% OCEAN DISP SHIFTED - D & M
GQ19D	CHAR	1	466	INCINERATION - NEW-ON-SITE
GQ19DPER	NUM	8	467	% OCEAN DISP SHIFTED - INCIN-NEW-ON-SITE
GQ19E	CHAR	1	475	INCINERATION AT EXIST ON-SITE
GQ19EPER	NUM	8	476	% OCEAN DISP SHIFTED - EXIST ON-SITE
GQ19F	CHAR	1	484	INCINERATION - OFF-SITE
GQ19FPER	NUM	8	485	% OCEAN DISP SHIFTED - INCIN-OFF-SITE
GQ19G	CHAR	1	493	LAND APPLICATION
GQ19GPER	NUM	8	494	% OCEAN DISP SHIFTED - LAND APPLICATION
GQ19H	CHAR	1	502	MONOFILL
GQ19HPER	NUM	8	503	% OCEAN DISP SHIFTED - MONOFILL
GQ19I	CHAR	1	511	SURFACE DISPOSAL
GQ19IPER	NUM	8	512	% OCEAN DISP SHIFTED - SURFACE DISPOSAL
GQ19J	CHAR	1	520	OTHER ALTERNATIVE
GQ19JOTH	CHAR	15	521	SPECIFY OTHER ALTERNATIVE
GQ19JPER	NUM	8	536	% OCEAN DISP SHIFTED - OTHER
ST	CHAR	2	4	STATE POSTAL CODE
SURVEYID	CHAR	9	6	SURVEY ID NUMBER

USEPA Office of Water

NATIONAL SEWAGE SLUDGE SURVEY

Analytical Database

DATA ELEMENT DICTIONARY

Prepared for:

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U.S. Environmental Protection Agency

Prepared by:

Viar and Company, Inc.
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Under EPA Contract No. 68-C9-0019
Operation of the Sample Control Center

PREFACE

The National Sewage Sludge Survey Analytical Database (the "Database") was developed by the Sample Control Center (SCC) for the EPA Office of Water Regulations and Standards (OWRS). The Database is designed to store the analytical data collected during the National Sewage Sludge Survey (NSSS) in a format amenable to statistical analysis in support of regulatory development under Section 405(d) of the Clean Water Act ([33USC 1345], as amended in 1987).

NATIONAL SEWAGE SLUDGE SURVEY ANALYTICAL DATABASE

DATA ELEMENT DICTIONARY

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SECTION 1
USING THE DICTIONARY

1.1 Purpose of the Data Element Dictionary

The purpose of the Data Element Dictionary (the "Dictionary") is to provide the statisticians of the OWRS Analysis and Evaluation Division (AED) and their contractors with the definitions and descriptions for all data on the Database. In this document the term "data element" is effectively synonymous with "field" or "variable".

The Dictionary begins with a description of the Database and a discussion of data element hierarchy. Next, an alphabetical listing of all data elements in the Database is presented with short descriptions of each data element for quick reference. Then, the individual members are listed with the data elements contained in each. Finally, the individual elements are listed alphabetically with definitions and occurrences within the Database specified.

1.2 Commonly Used Acronyms and Abbreviations

AED -- Analysis and Evaluation Division
CC -- Correlation coefficient
CRDL -- Contract required detection limit
CVAA -- Cold vapor atomic absorption spectroscopy
DL -- Detection limit
EGD -- Effluent Guidelines Division
EPA -- Environmental Protection Agency
GC/HSD -- Gas chromatography with a halogen specific detector
GC/MS -- Gas chromatography/mass spectrometry
GFAA -- Graphite furnace atomic absorption spectroscopy
HRGC/HRMS -- High resolution gas chromatography high resolution mass spectrometry
IBM -- International Business Machines Corporation
ICP -- Inductively coupled plasma atomic emission spectroscopy
IFB -- Invitation for bid
ITD -- Industrial Technology Division
MSD -- Matrix spike duplicate
NCC -- National Computer Center
NSSS -- National Sewage Sludge Survey
OS/VS2 -- IBM Operating System Version 2
OWRS -- Office of Water Regulations and Standards
RPD -- Relative Percent Difference
PCB -- Polychlorinated biphenyls
SAS -- Statistical Analysis System
SCC -- Sample Control Center
TCLP -- Toxicity characteristic leaching procedure

1.3 List of References

1) "Quantitation Reports On Magnetic Tape", ITD SCC, 10/28/86.
2) "ITD Data Element Dictionary", ITD SCC, 10/28/86.
3) "NSSS Quality Assurance Project Plan", ITD SCC, 4/10/89.
4) "Analytical Methods for the National Sewage Sludge Survey", Revision A, USEPA OWRS ITD, August 1989.

1.4 Conventions

Database member names and data element names will appear in all upper case letters. Data element code descriptions will not be given when the code description exists within the Database or when the code description is only relevant to the SCC (SCC internal code).

SECTION 2
DATABASE DESCRIPTION

The Database is a SAS format IBM OS\VS2 Data Set contained on a 3380 disk drive at the EPA National Computer Center (NCC). The SAS data library is partitioned into nine members as follows:

MEMBER NAME		DESCRIPTION
CAS_NUM	--	An analyte-level cross reference of the Chemical Abstract Service (CAS) number, the analyte name, the analytical technique, and the method utilized for the analytes included in the NSSS. The List of Analytes for the NSSS report contained in Appendix C of this document was produced from this member. (Note: This member is included for reference purposes only, it is not required for data analysis.)
CL_EPA	--	The analyte-level results of the analysis of EPA samples by classical "wet" techniques.
DI_EPA	--	The analyte-level results of dioxin\furan analyses of EPA samples by HRGC\ HRMS using EPA Method 1613.
FAC_INFO	--	An episode-level cross-reference of episode number, EPA survey ID number, facility name, and facility address.(Note: FAC_INFO contains information for all 208 facilities that responded to the 1988 Sewage Sludge Disposal Survey. Of these, 180 are NSSS study participants.)
MT_EPA	--	The analyte-level results of elemental (metal) analyses of EPA samples by ICP, GFAA, and CVAA using EPA Method 1620.
ORG_EPA	--	The analyte-level results of organic analyses of EPA samples by isotope dilution GC/MS using EPA Methods 1624C/1625C.
PH_EPA	--	The analyte-level results of pesticide/PCB/herbicide analyses of EPA samples by GC with selective detectors using EPA Method 1618.
SAM_INFO	--	Sample-level information summarized from the trip reports identifying duplicate samples and providing a description of the treatment process and disposal method. Appendix D provides definitions of the sludge processing terms that appear as logical variables in this member.
SOLIDS	--	The sample-level results of residue determination using EPA Method 160.3 and expressed as percent solids. This member is designed to facilitate the conversion of dry weight results to wet weight results for any analyte, using the formula shown in Appendix B. When ANALYTE = 'RESIDUE', the value for percent solids is equivalent to the value contained in member CL_EPA, data element AMOUNT. (Note: All analytical results are currently expressed on a dry weight to dry weight basis, regardless of sample matrix.)

Analytical data are received at the SCC in varying formats and standardized into a common, analyte-level format prior to distribution to AED. Figure 1 illustrates this process.

EPISODE is the common key that provides a link to the facility sampled across Database members. SAMPLE provides a link to a specific sampling point at a facility. ANALYTE is required to establish a link to a unique result within one given member. Figure 2 shows primary key concurrence across Database members. (The member CAS_NUM is not required for data analysis and therefore is not included in this figure.)

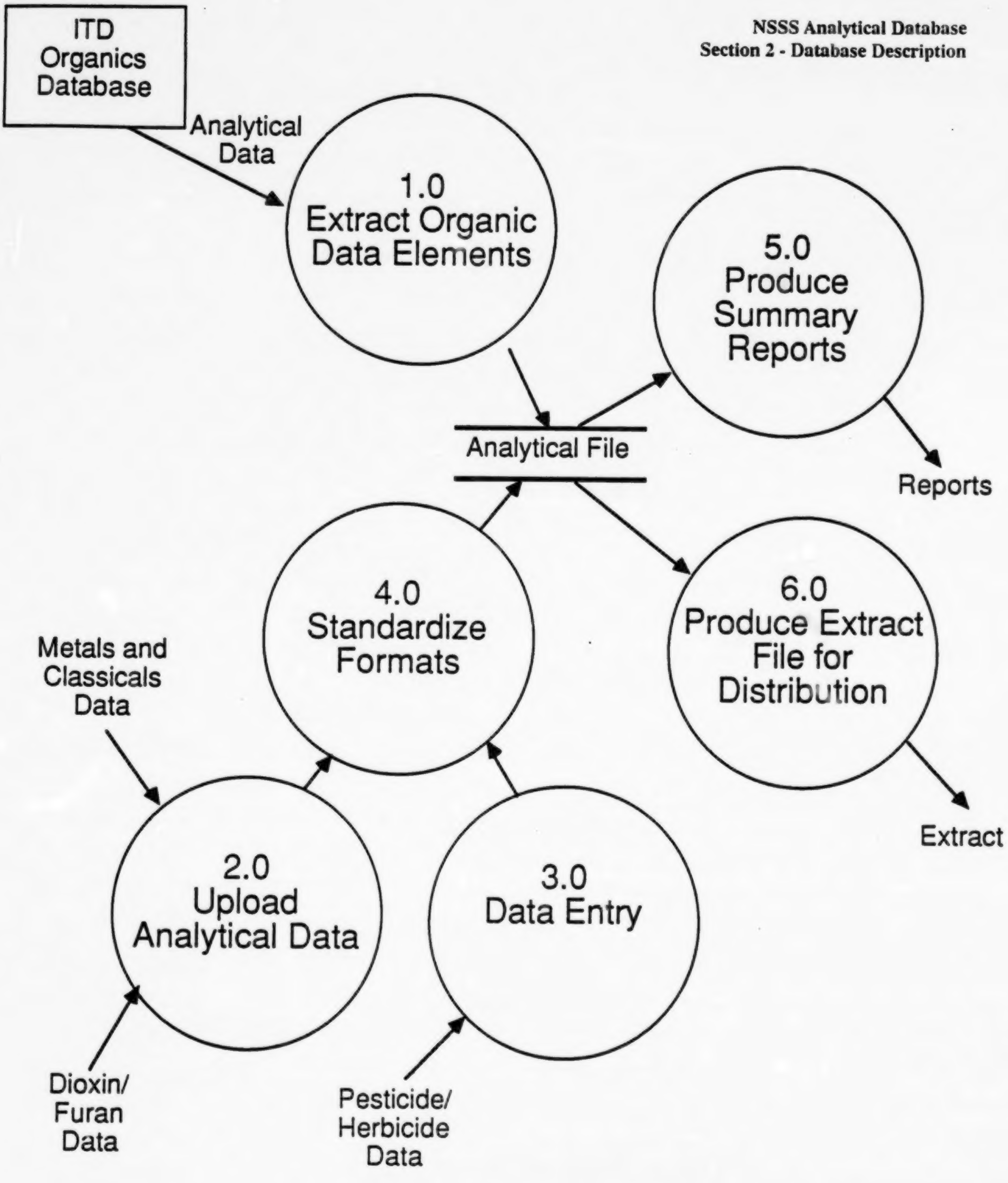
ITD Organics Database
Analytical Data
1.0 Extract Organic Data Elements
5.0 Produce Summary Reports
Analytical File
Reports
4.0 Standardize Formats
6.0 Produce Extract File for Distribution
Metals and Classicals Data
Extract
2.0 Upload Analytical Data
3.0 Data Entry
Dioxin/ Furan Data
Pesticide/ Herbicide Data

Figure 1: National Sewage Sludge Survey Analytical Database Flow Diagram

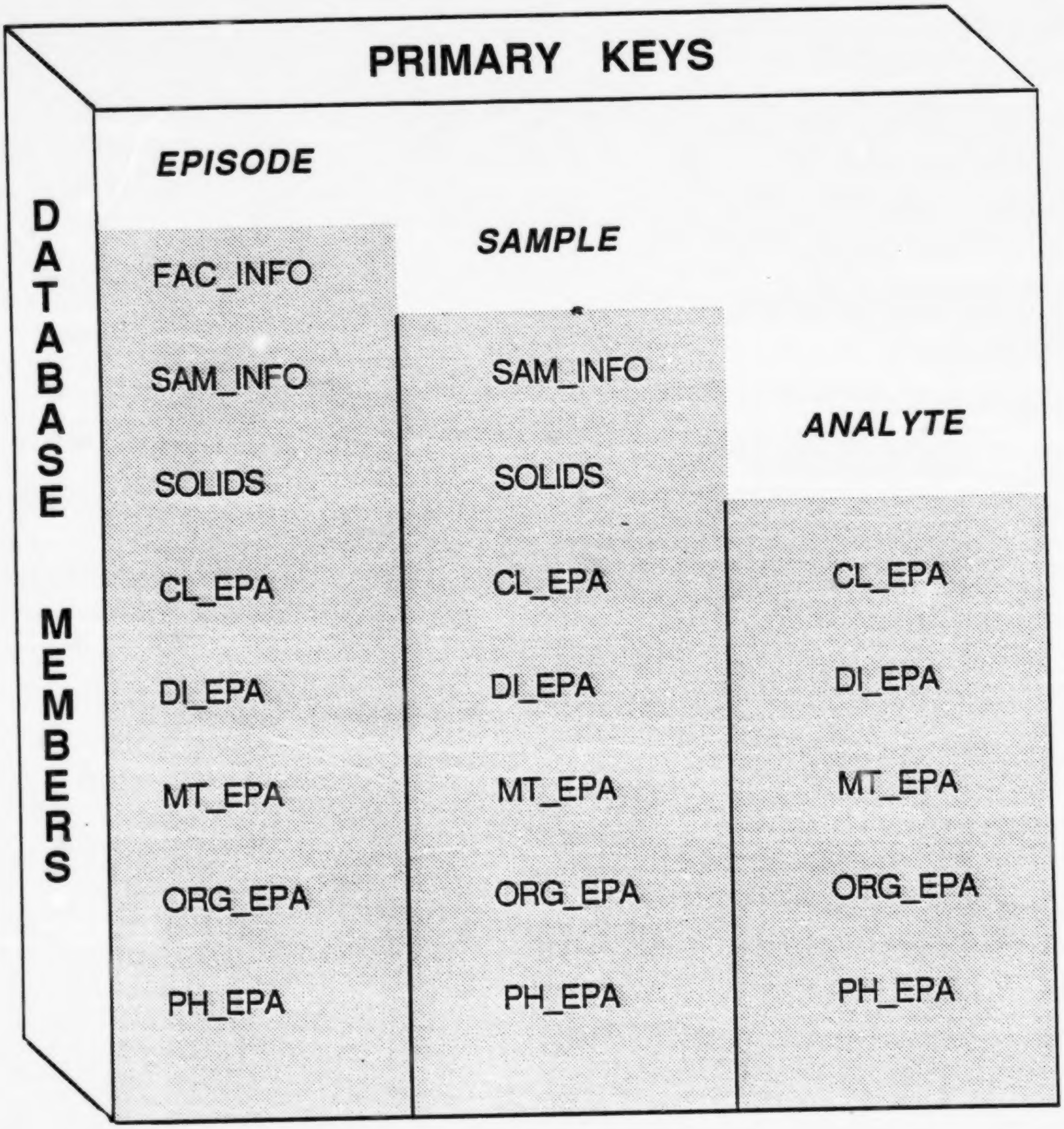

Figure 2: National Sewage Sludge Survey Analytical Database Hierarchy

SECTION 3
ALPHABETICAL INDEX OF ELEMENTS

This section is designed to provide a quick alphabetical reference of all data elements occurring within the Database.

The following information is provided for each element entry:

1) Element name.
2) Type - data type of element (i.e., character or numeric).
3) Length of element in bytes.
4) Description - concise explanation of the element's function.

ELEMENT	TYPE	LENGTH	DESCRIPTION
ADDR	CHAR	39	FACILITY MAILING ADDRESS FROM QUESTIONNAIRE
AERO_DIG	CHAR	1	AEROBIC DIGESTER FLAG
AMT_FLAG	CHAR	4	AMOUNT QUALIFIER
AMOUNT	NUM	8	ANALYTE CONCENTRATION
ANAE_DIG	CHAR	1	ANAEROBIC DIGESTER FLAG
ANALDT	CHAR	12	ANALYSIS DATE AND TIME (MMDDYYHHMM)
ANALYTE	CHAR	40	ANALYTE NAME
AUTHNAME	CHAR	39	SURVEY RESPONDENT'S NAME FROM QUESTIONNAIRE
BLK_NAME	CHAR	10	BLANK QUANTITATION FILE NAME
BOTTLE	CHAR	2	BOTTLE NUMBER
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
CENTRI	CHAR	1	CENTRIFUGE FLAG
CHEM_SLG	CHAR	1	CHEMICAL SLUDGE FLAG
CITY	CHAR	22	FACILITY CITY NAME FROM QUESTIONNAIRE
CL2_OX	CHAR	1	CL2 OXIDIZED FLAG
CMPDTYPE	CHAR	6	ANALYTICAL FRACTION
COLUMN	CHAR	7	GC COLUMN
COMPOST	CHAR	1	COMPOSTED FLAG
CONCENTR	CHAR	11	CONCENTRATION/DILUTION FACTOR
CONTACT	CHAR	32	FACILITY CONTACT PERSON FROM QUESTIONNAIRE
DAF	CHAR	1	DISSOLVED AIR FLOTATION FLAG
DETLIMIT	NUM	8	CALCULATED DETECTION LIMIT
DF_NAME	CHAR	10	QUANTITATION FILE NAME
DISPOSAL	CHAR	16	DISPOSAL METHOD
DRY_BED	CHAR	1	DRYING BED FLAG
DUP_NO	CHAR	5	DUPLICATE EPA SAMPLE NUMBER
DUPFLAG	CHAR	1	DUPLICATE FLAG
EPISODE	CHAR	4	EPA EPISODE NUMBER
FACNAME	CHAR	39	FACILITY NAME FROM QUESTIONNAIRE
FIL_PRES	CHAR	1	FILTER PRESS FLAG
FRACTION	CHAR	1	ANALYSIS FRACTION
GCMS	CHAR	2	LABORATORY GC/MS ID
GRAV_THK	CHAR	1	GRAVITY THICKENER FLAG
HEAT_TRT	CHAR	1	HEAT TREATED FLAG
LAB	CHAR	3	SCC LABORATORY CODE
LAB_ID	CHAR	12	LABORATORY SAMPLE ID
LABNAME	CHAR	5	LABORATORY NAME
LIME_STA	CHAR	1	LIME STABILIZED FLAG
M_FLAG	CHAR	2	METHOD TYPE
MATRIX	CHAR	12	SAMPLE MATRIX
METHOD	CHAR	8	ANALYTICAL METHOD UTILIZED
NAME	CHAR	42	ANALYTE NAME
OFF_SITE	CHAR	1	PROCESSED OFF SITE FLAG
OPR_NAME	CHAR	10	ONGOING PRECISION AND RECOVERY QUANTITATION FILE
OTHER	CHAR	25	OTHER TREATMENT METHOD
POLY_ADD	CHAR	1	POLYMER ADDED FLAG
PRI_SLG	CHAR	1	PRIMARY SLUDGE FLAG
RFP	CHAR	3	RELATIVE FILE POSITION

ELEMENT	TYPE	LENGTH	DESCRIPTION
SAMP_WT	NUM	8	SAMPLE WEIGHT
SAMPDATE	NUM	8	SAMPLING DATE
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
SEC_SLG	CHAR	1	SECONDARY SLUDGE FLAG
SLG_MIX	CHAR	1	SLUDGE MIXTURE FLAG
SLUDGE	CHAR	1	SLUDGE FLAG
SOLIDS	NUM	8	PERCENT SOLIDS IN SAMPLE
STATE	CHAR	2	FACILITY STATE ABBREVIATION FROM QUESTIONNAIRE
SURVEYID	CHAR	9	FACILITY SURVEY ID NUMBER FROM QUESTIONNAIRE
TAPE	CHAR	3	SCC TAPE NUMBER
TECH	CHAR	8	ANALYSIS TECHNIQUE
TYPE	CHAR	3	QUANTITATION REPORT TYPE
UNIT	CHAR	5	UNIT OF MEASUREMENT FOR AMOUNT
VAC_FILL	CHAR	1	VACUUM FILTERED FLAG
VER_NAME	CHAR	10	CALIBRATION VERIFICATION QUANTITATION FILE
WET_OX	CHAR	1	WET AIR OXIDATED FLAG
WT_UNIT	CHAR	5	UNIT OF MEASUREMENT FOR THE SAMPLE WEIGHT
ZIP	CHAR	11	FACILITY ZIP CODE FROM QUESTIONNAIRE

SECTION 4

INDEX OF ELEMENTS BY MEMBER

This section presents the view of the Database from the member perspective. Each Database member is listed in alphabetical order with a brief description of its contents.

The following information is provided for each of the nine Database members:

1) Alphabetical list of data elements in the member.
2) Type - data type of each element (i.e., character or numeric).
3) Length of each element in bytes.
4) Description - concise explanation of each element's function.

==

MEMBER: CAS_NUM

FILE DESCRIPTION: Analyte-level cross reference of CAS number, analyte name, analysis technique and method

VARIABLE	TYPE	LENGTH	DESCRIPTION
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
CMPDTYPE	CHAR	6	ANALYTICAL FRACTION
METHOD	CHAR	8	ANALYTICAL METHOD UTILIZED
NAME	CHAR	42	ANALYTE NAME
TECH	CHAR	8	ANALYSIS TECHNIQUE

==

MEMBER: CL_EPA

FILE DESCRIPTION: Analyte-level results of classicals analysis of EPA samples

VARIABLE	TYPE	LENGTH	DESCRIPTION
AMOUNT	NUM	8	ANALYTE CONCENTRATION
ANALYTE	CHAR	40	ANALYTE NAME
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
DETLIMIT	NUM	8	CALCULATED DETECTION LIMIT
EPISODE	CHAR	4	EPA EPISODE NUMBER
AMT_FLAG	CHAR	4	AMOUNT QUALIFIER
LAB_ID	CHAR	12	LABORATORY SAMPLE ID
LABNAME	CHAR	5	LABORATORY NAME
MATRIX	CHAR	12	SAMPLE MATRIX
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
UNIT	CHAR	5	UNIT OF MEASUREMENT FOR AMOUNT

==

MEMBER: DI_EPA

FILE DESCRIPTION: Analyte-level results of dioxin/furan analysis of EPA samples

VARIABLE	TYPE	LENGTH	DESCRIPTION
AMOUNT	NUM	8	ANALYTE CONCENTRATION
ANALDT	CHAR	12	ANALYSIS DATE AND TIME (MMDDYYHHMM)
ANALYTE	CHAR	40	ANALYTE NAME
BLK_NAME	CHAR	10	BLANK QUANTITATION FILE NAME
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
COLUMN	CHAR	7	GC COLUMN
DF_NAME	CHAR	10	QUANTITATION FILE NAME
DETLIMIT	NUM	8	CALCULATED DETECTION LIMIT
EPISODE	CHAR	4	EPA EPISODE NUMBER
LABNAME	CHAR	5	LABORATORY NAME
OPR_NAME	CHAR	10	ONGOING PRECISION AND RECOVERY QUANTITATION FILE
SAMP_WT	NUM	8	SAMPLE WEIGHT
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
UNIT	CHAR	5	UNIT OF MEASUREMENT FOR AMOUNT
VER_NAME	CHAR	10	CALIBRATION VERIFICATION QUANTITATION FILE NAME
WT_UNIT	CHAR	5	UNIT OF MEASUREMENT FOR THE SAMPLE WEIGHT

MEMBER: FAC_INFO

FILE DESCRIPTION: Cross reference of episode number, survey ID number and facility name and address.

VARIABLE	TYPE	LENGTH	DESCRIPTION
ADDR	CHAR	39	FACILITY MAILING ADDRESS FROM QUESTIONNAIRE
AUTHNAME	CHAR	39	SURVEY RESPONDENT'S NAME FROM QUESTIONNAIRE
CITY	CHAR	22	FACILITY CITY FROM QUESTIONNAIRE
CONTACT	CHAR	32	FACILITY CONTACT PERSON FROM QUESTIONNAIRE
EPISODE	CHAR	4	EPA EPISODE NUMBER
FACNAME	CHAR	39	FACILITY NAME FROM QUESTIONNAIRE
STATE	CHAR	2	FACILITY STATE ABBREVIATION FROM QUESTIONNAIRE
SURVEYID	CHAR	9	FACILITY SURVEY ID NUMBER FROM QUESTIONNAIRE
ZIP	CHAR	11	FACILITY ZIP CODE FROM QUESTIONNAIRE

==

MEMBER: MT_EPA

FILE DESCRIPTION: Analyte-level results of metals analysis of EPA samples

VARIABLE	TYPE	LENGTH	DESCRIPTION
AMOUNT	NUM	8	ANALYTE CONCENTRATION
ANALYTE	CHAR	40	ANALYTE NAME
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
DETLIMIT	NUM	8	CALCULATED DETECTION LIMIT
EPISODE	CHAR	4	EPA EPISODE NUMBER
AMT_FLAG	CHAR	6	AMOUNT QUALIFIER
LAB_ID	CHAR	12	LABORATORY SAMPLE ID
LABNAME	CHAR	5	LABORATORY NAME
M_FLAG	CHAR	2	METHOD TYPE
MATRIX	CHAR	12	SAMPLE MATRIX
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
UNIT	CHAR	5	UNIT OF MEASUREMENT FOR AMOUNT

==

MEMBER: ORG_EPA

FILE DESCRIPTION: Analyte-level results of volatile and semivolatile organics analysis of EPA samples

VARIABLE	TYPE	LENGTH	DESCRIPTION
AMOUNT	NUM	8	ANALYTE CONCENTRATION
ANALDT	CHAR	12	CONCATENATED ANALYSIS DATE AND TIME
ANALYTE	CHAR	40	ANALYTE NAME
BOTTLE	CHAR	2	BOTTLE NUMBER
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
CONCENTR	CHAR	11	CONCENTRATION/DILUTION FACTOR
DETLIMIT	NUM	8	CALCULATED DETECTION LIMIT
EPISODE	CHAR	4	EPA EPISODE NUMBER
FRACTION	CHAR	1	ANALYSIS FRACTION
GCMS	CHAR	2	LABORATORY GC/MS ID
LAB	CHAR	3	SCC LABORATORY CODE
LABNAME	CHAR	5	LABORATORY NAME
PLANTNAM	CHAR	40	PLANT NAME, CITY AND STATE
RFP	CHAR	3	RELATIVE FILE POSITION
SAMPDATE	NUM	8	SAMPLING DATE
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
SLUDGE	CHAR	1	SLUDGE FLAG
TAPE	CHAR	3	SCC TAPE NUMBER
TYPE	CHAR	3	QUANTITATION REPORT TYPE
UNIT	CHAR	5	UNIT OF MEASUREMENT FOR AMOUNT

==

==

MEMBER: PH_EPA

FILE DESCRIPTION: Analyte-level results of pesticide/pcb/herbicide analysis of EPA samples

VARIABLE	TYPE	LENGTH	DESCRIPTION
AMOUNT	NUM	8	ANALYTE CONCENTRATION
ANALDT	CHAR	12	CONCATENATED ANALYSIS DATE AND TIME
ANALYTE	CHAR	40	ANALYTE NAME
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
DETLIMIT	NUM	8	CALCULATED DETECTION LIMIT
EPISODE	CHAR	4	EPA EPISODE NUMBER
LABNAME	CHAR	5	LABORATORY NAME
MATRIX	CHAR	12	SAMPLE MATRIX
SAMP_WT	NUM	8	SAMPLE WEIGHT
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
UNIT	CHAR	5	UNIT OF MEASUREMENT FOR THE AMOUNT
WT_UNIT	CHAR	5	UNIT OF MEASUREMENT FOR THE SAMPLE WEIGHT

==

MEMBER: SAM_INFO

FILE DESCRIPTION: Sample information obtained from the trip reports

VARIABLE	TYPE	LENGTH	DESCRIPTION
AERO_DIG	CHAR	1	AEROBIC DIGESTER FLAG
ANAE_DIG	CHAR	1	ANAEROBIC DIGESTER FLAG
CENTRI	CHAR	1	CENTRIFUGE FLAG
CHEM_SLG	CHAR	1	CHEMICAL SLUDGE FLAG
CL2_OX	CHAR	1	CL2 OXIDIZED FLAG
COMPOST	CHAR	1	COMPOSTED FLAG
DAF	CHAR	1	DISSOLVED AIR FLOTATION FLAG
DISPOSAL	CHAR	16	DISPOSAL METHOD
DRY_BED	CHAR	1	DRYING BED FLAG
DUP_NO	CHAR	5	DUPLICATE EPA SAMPLE NUMBER
DUPFLAG	CHAR	1	DUPLICATE FLAG
EPISODE	CHAR	4	EPA EPISODE NUMBER
FIL_PRES	CHAR	1	FILTER PRESS FLAG
GRAV_THK	CHAR	1	GRAVITY THICKENER FLAG
HEAT_TRT	CHAR	1	HEAT TREATED FLAG
LIME_STA	CHAR	1	LIME STABILIZED FLAG
OFF_SITE	CHAR	1	PROCESSED OFF SITE FLAG
OTHER	CHAR	25	OTHER TREATMENT METHOD
POLY_ADD	CHAR	1	POLYMER ADDED FLAG
PRI_SLG	CHAR	1	PRIMARY SLUDGE FLAG
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
SEC_SLG	CHAR	1	SECONDARY SLUDGE FLAG
SLG_MIX	CHAR	1	SLUDGE MIXTURE FLAG
VAC_FILL	CHAR	1	VACUUM FILTERED FLAG
WET_OX	CHAR	1	WET AIR OXIDATED FLAG

MEMBER: SOLIDS

FILE DESCRIPTION: The sample-level results of the residue determination

VARIABLE	TYPE	LENGTH	DESCRIPTION
EPISODE	CHAR	4	EPA EPISODE NUMBER
SAMPLE	CHAR	5	EPA SAMPLE NUMBER
SOLIDS	NUM	8	PERCENT SOLIDS IN SAMPLE
UNIT	CHAR	5	UNIT FOR SOLIDS MEASUREMENT

SECTION 5

DATA ELEMENT DEFINITIONS

This section presents data elements alphabetically and provides the following definition for each element entry:

1) Element name.
2) Type - data type of the element (i.e., character or numeric).
3) Length of the element in bytes.
4) Description - concise explanation of the element's function.
5) Codes - list of acceptable codes and code definitions.
6) Occurrence - Database member(s) in which the element occurs.

Additional descriptive information for logical variables contained in SAM_INFO is presented in Appendix D.

ELEMENT	TYPE	LENGTH	DESCRIPTION
ADDR	CHAR	39	FACILITY ADDRESS FROM QUESTIONNAIRE

Element Codes: None
Element Occurrence: FAC_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
AERO_DIG	CHAR	1	AEROBIC DIGESTER FLAG

Element Codes: T = true, F = false
Element Occurrence: SAM_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
AMT_FLAG	CHAR	4	AMOUNT QUALIFIER

Element Codes: B = The amount is > or = to DL but < CRDL
D = Analysis of MSD failed required RPD
E = Amount estimated due to interference
M = Slope and correlation coefficient (CC) met
MM= Slope and CC met on diluted sample
R = Spike recovery limits met after rerun
RR= Slope and CC not met on diluted sample for GFAA or spike recovery limits not met for ICP U = Not detected, report with detection limit for 27 IFB metals
Element Occurrence: CL_EPA, MT_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
AMOUNT	NUM	8	ANALYTE CONCENTRATION

Element Codes: None
Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
ANAE_DIG	CHAR	1	ANAEROBIC DIGESTER FLAG

Element Codes: T = true, F = false
Element Occurrence: SAM_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
ANALDT	CHAR	12	ANALYSIS DATE AND TIME (MMDDYYHHMM)

Element Codes: None
Element Occurrence: DI_EPA, ORG_EPA, PH_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
ANALYTE	CHAR	40	ANALYTE NAME

Element Codes: None
Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
AUTHNAME	CHAR	39	SURVEY RESPONDENT'S NAME FROM QUESTIONNAIRE

Element Codes: None
Element Occurrence: FAC_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
BLK_NAME	CHAR	10	BLANK QUANTITATION FILE NAME

Element Codes: None
Element Occurrence: DI_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
BOTTLE	CHAR	2	BOTTLE NUMBER

Element Codes: None
Element Occurrence: ORG_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
CAS_NO	CHAR	10	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER

Element Codes: See Appendix C
Element Occurrence: CAS_NUM, CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
CENTRI	CHAR	1	CENTRIFUGE FLAG

Element Codes: T = true, F = false
Element Occurrence: SAM_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
CHEM_SLG	CHAR	1	CHEMICAL SLUDGE FLAG

Element Codes: T = true, F = false
Element Occurrence: SAM_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
CITY	CHAR	22	FACILITY CITY FROM QUESTIONNAIRE

Element Codes: None
Element Occurrence: FAC_INFO

```
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 CL2_OX      CHAR       1      CL2 OXIDIZED FLAG
 ----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 CMPDTYPE    CHAR       6      ANALYTICAL FRACTION
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CAS_NUM
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 COLUMN      CHAR       7      GC COLUMN TYPE
 ----------------------------------------------------------------------
 Element Codes:   DB-5 "Screening" column
        SP-2330 "Confirmatory" column for 2378-TCDF
        DB-225 "Confirmatory" column for 2378-TCDF
 Element Occurrence: DI_EPA
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 COMPOST     CHAR       1      COMPOSTED FLAG
 ----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 CONCENTR    CHAR      11      CONCENTRATION/DILUTION FACTOR
 ----------------------------------------------------------------------
 Element Codes:   See References 1 and 2
 Element Occurrence: ORG_EPA
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 CONTACT     CHAR      32      FACILITY CONTACT PERSON FROM QUESTIONNAIRE
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: FAC_INFO
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 DAF         CHAR       1      DISSOLVED AIR FLOTATION FLAG
 ----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 DETLIMIT    NUM        8      CALCULATED DETECTION LIMIT
 ----------------------------------------------------------------------
 Element Codes:   ND = Not detected
        BDL = Below detection limit
 Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA
========================================================================
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 DF_NAME     CHAR       10      QUANTITATION FILE NAME
 ---------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: DI_EPA
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 DISPOSAL    CHAR       16      DISPOSAL METHOD
 ---------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 DRY_BED     CHAR        1      DRYING BED FLAG
 ---------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 DUP_NO      CHAR        5      DUPLICATE EPA SAMPLE NUMBER
 ---------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 DUPFLAG     CHAR        1      DUPLICATE FLAG
 ---------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 EPISODE     CHAR        4      EPA EPISODE NUMBER
 ---------------------------------------------------------------------
 Element Codes:   For valid codes see SAM_INFO member, for reference
 between EPISODE and facility name see FAC_INFO member
 Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA, SAM_INFO,
        FAC_INFO, SOLIDS
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 FACNAME     CHAR       39      FACILITY NAME FROM QUESTIONNAIRE
 ---------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: FAC_INFO
========================================================================
 ELEMENT     TYPE     LENGTH    DESCRIPTION
 FIL_PRES    CHAR        1      FILTER PRESS FLAG
 ---------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 FRACTION   CHAR       1      ANALYSIS FRACTION
 --------------------------------------------------------------------
 Element Codes:   A = Acid organics fraction
        B = Base/neutral organics fraction
        C = Combined acid/base/neutral organics fraction
        V = Volatile organics fraction
 Element Occurrence: ORG_EPA
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 GCMS       CHAR       2      LABORATORY GC/MS ID
 --------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: ORG_EPA
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 GRAV_THK   CHAR       1      GRAVITY THICKENER FLAG
 --------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 HEAT_TRT   CHAR       1      HEAT TREATED FLAG
 --------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 LAB        CHAR       3      SCC LABORATORY CODE
 --------------------------------------------------------------------
 Element Codes:   See LABNAME file
 Element Occurrence: ORG_EPA
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 LAB_ID     CHAR      12      LABORATORY SAMPLE ID
 --------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CL_EPA, MT_EPA
======================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 LABNAME    CHAR       5      LABORATORY NAME
 --------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA
======================================================================
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 LIME_STA    CHAR       1        LIME STABILIZED FLAG
 ----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 M_FLAG      CHAR       2        METHOD TYPE
 ----------------------------------------------------------------------
 Element Codes:   CV = CVAA
        F         = GFAA
        P         = ICP
 Element Occurrence: MT_EPA
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 MATRIX      CHAR      12        SAMPLE MATRIX
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CL_EPA, MT_EPA, PH_EPA
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 METHOD      CHAR       8        ANALYTICAL METHOD UTILIZED
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CAS_NUM
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 NAME        CHAR      42        ANALYTE NAME
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CAS_NUM
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 OFF_SITE    CHAR       1        PROCESSED OFF SITE FLAG
 ----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 OPR_NAME    CHAR      10        ONGOING PRECISION AND RECOVERY QUANTITATION
                                 FILE
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: DI_EPA
========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 OTHER       CHAR      25        OTHER TREATMENT METHOD
 ----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: SAM_INFO
========================================================================
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 POLY_ADD    CHAR       1        POLYMER ADDED FLAG
 -----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 PRI_SLG     CHAR       1        PRIMARY SLUDGE FLAG
 -----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 RFP         CHAR       3        RELATIVE FILE POSITION
 -----------------------------------------------------------------------
 Element Codes:   None (Internal SCC)
 Element Occurrence: ORG_EPA
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 SAMPDATE    NUM        8        SAMPLING DATE
 -----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: ORG_EPA
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 SAMPLE      CHAR       5        EPA SAMPLE NUMBER
 -----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA, SAM_INFO,
       SOLIDS
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 SEC_SLG     CHAR       1        SECONDARY SLUDGE FLAG
 -----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 SLG_MIX     CHAR       1        SLUDGE MIXTURE FLAG
 -----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=========================================================================
 ELEMENT     TYPE     LENGTH     DESCRIPTION
 SLUDGE      CHAR       1        SLUDGE FLAG
 -----------------------------------------------------------------------
 Element Codes:   S = sludge,    = water
 Element Occurrence: ORG_EPA
=========================================================================
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 POLY_ADD   CHAR      1       POLYMER ADDED FLAG
 -------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 PRI_SLG    CHAR      1       PRIMARY SLUDGE FLAG
 -------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 RFP        CHAR      3       RELATIVE FILE POSITION
 -------------------------------------------------------------------
 Element Codes:   None (Internal SCC)
 Element Occurrence: ORG_EPA
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 SAMPDATE   NUM       8       SAMPLING DATE
 -------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: ORG_EPA
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 SAMPLE     CHAR      5       EPA SAMPLE NUMBER
 -------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA, SAM_INFO,
       SOLIDS
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 SEC_SLG    CHAR      1       SECONDARY SLUDGE FLAG
 -------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 SLG_MIX    CHAR      1       SLUDGE MIXTURE FLAG
 -------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
=====================================================================
 ELEMENT    TYPE    LENGTH    DESCRIPTION
 SLUDGE     CHAR      1       SLUDGE FLAG
 -------------------------------------------------------------------
 Element Codes:   S = sludge,    = water
 Element Occurrence: ORG_EPA
=====================================================================
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 SOLIDS      NUM       8       PERCENT SOLIDS IN SAMPLE
 -----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: SOLIDS
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 STATE       CHAR      2       FACILITY STATE ABBREVIATION FROM
                               QUESTIONNAIRE
 -----------------------------------------------------------------------
 Element Codes:   Standard two character state postal code
 Element Occurrence: FAC_INFO
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 SURVEYID    CHAR      9       FACILITY SURVEY ID NUMBER FROM QUESTIONNAIRE
 -----------------------------------------------------------------------
 Element Codes:   None
 Element Occurrence: FAC_INFO
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 TAPE        CHAR      3       SCC TAPE NUMBER
 -----------------------------------------------------------------------
 Element Codes:   Internal SCC
 Element Occurrence: ORG_EPA
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 TECH        CHAR      8       ANALYSIS TECHNIQUE
 -----------------------------------------------------------------------
 Element Codes:   See Appendix C
 Element Occurrence: CAS_NUM
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 TYPE        CHAR      3       QUANTITATION REPORT TYPE
 -----------------------------------------------------------------------
 Element Codes:   Internal SCC
 Element Occurrence: ORG_EPA
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 UNIT        CHAR      5       UNIT OF MEASUREMENT FOR AMOUNT
 -----------------------------------------------------------------------
 Element Codes:   Standard metric units
 Element Occurrence: CL_EPA, DI_EPA, MT_EPA, ORG_EPA, PH_EPA, SOLIDS
========================================================================
 ELEMENT     TYPE    LENGTH    DESCRIPTION
 VAC_FILL    CHAR      1       VACUUM FILTERED FLAG
 -----------------------------------------------------------------------
 Element Codes:   T = true, F = false
 Element Occurrence: SAM_INFO
========================================================================
```

ELEMENT	TYPE	LENGTH	DESCRIPTION
VER_NAME	CHAR	10	CALIBRATION VERIFICATION QUANTITATION FILE NAME

Element Codes: None

Element Occurrence: DI_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
WET_OX	CHAR	1	WET AIR OXIDATED FLAG

Element Codes: T = true, F = false

Element Occurrence: SAM_INFO

ELEMENT	TYPE	LENGTH	DESCRIPTION
WT_UNIT	CHAR	5	UNIT OF MEASUREMENT FOR THE SAMPLE WEIGHT

Element Codes: Standard metric units

Element Occurrence: DI_EPA, PH_EPA

ELEMENT	TYPE	LENGTH	DESCRIPTION
ZIP	CHAR	11	FACILITY ZIP CODE FROM QUESTIONNAIRE

Element Codes: Standard US Postal Service ZIP codes

Element Occurrence: FAC_INFO

APPENDIX A
COMPLETENESS INFORMATION

A total of 240 samples were collected from 181 facilities sampled during the NSSS. Subsequent to the sampling and analysis, EPA identified one facility, Episode 1477, that did not have a secondary treatment system installed and operating at the time the sampling occurred. At EPA's request SCC deleted all data records for Episode 1477 (one sample) from the Database. The final Database contains data records for 239 samples from 180 facilities.

The following table contains completeness information specific to each data member.

Member	No. of Samples	No. of Analytes	No. of Records	% Complete
CL_EPA	239	7	1673	100
DI_EPA	239	25	5975	100
	146*	1	146	100
MT_EPA	239	69	16491	100
ORG_EPA	240**	233	55920	100
PH_EPA	239	77	18365	99***

---

* 146 samples required an alternate column confirmatory analysis.

** Sample 16531 (Episode 1362) is a field split of sample 16525 and was analyzed by a separate laboratory.

*** The chlorinated pesticides/PCB fraction (38 analytes) was lost during extraction of sample 17507 (Episode 1565).

APPENDIX B
RESULTS CONVERSION

The Database currently contains the results expressed on a dry weight basis (weight/weight). The data element AMOUNT contains the analyte concentration (result) and is common across all analyte-level members. The following analyte-level members contain results that require conversion if a wet weight result is desired:

CL_EPA - Contains results expressed in MG/KG (milligrams per kilogram) and percent (%) (unitless).

DI_EPA - Contains results expressed in NG/KG (nanograms per kilogram).

MT_EPA - Contains results expressed in MG/KG.

ORG_EPA - Contains results expressed in UG/KG (micrograms per kilogram).

PH_EPA - Contains results expressed in UG/KG.

The following formula must be utilized in order to convert the AMOUNT from a dry weight basis to a wet weight basis. This formula assumes a density of 1:

$$\text{AMOUNT (wet)} = \text{AMOUNT (dry)} \times (\text{SOLIDS}/100)$$

where,

AMOUNT = The result contained in the data element AMOUNT in the analyte-level members.

SOLIDS = The percent solids result contained in the data element SOLIDS in the member SOLIDS.

After conversion, the AMOUNT (wet) should be expressed in a weight to volume basis (i.e., UG/L).

To convert AMOUNT back to a dry weight basis, use the following formula:

$$\text{AMOUNT (dry)} = \frac{\text{AMOUNT (wet)}}{\text{SOLIDS}/100}$$

After conversion, the AMOUNT (dry) should be expressed in a weight to weight basis (i.e., UG/KG).

APPENDIX C
LIST OF NSSS ANALYTES

This appendix includes the list of NSSS analytes generated from the CAS_NUM Database member. Analytes are arranged by fraction and the following information is provided for each analyte:

FRACTION -- Analysis type; categorization of the analytes by analytical method used.

VOLATILE ORGANICS - Results for volatile organics are contained in the ORG_EPA member.

SEMIVOLATILE ORGANICS - Results for semivolatile organics are contained in the ORG_EPA member.

PESTICIDES/HERBICIDES - Results for pesticides and herbicides are contained in the PH_EPA member.

DIOXINS/FURANS - Results for dioxins and furans are contained in the DI_EPA member.

METALS - Results for metals are contained in the MT_EPA member.

CLASSICALS - Results for classicals analysis are contained in the CL_EPA member.

CAS NUMBER -- The Chemical Abstracts Service (CAS) Registry Number for the analyte. In certain instances, CAS has assigned a number to a compound class and this number is used. Note: Where CAS has not assigned a number to an analyte or class, a synthetic numbering system has been used. This number begins with a single digit followed by an underscore or hyphen followed by three digits (e.g., 1_001) and ensures that an analyte can be unambiguously identified in relationship to the class from which it is derived. The three digits following the underscore identify its position on the parent list. In this document, the following leading digits are used:

1_ identifies the RCRA Appendix VIII List.
1- identifies analytes on ITD's List.
2_ identifies the RPAR List.

COMMON NAME -- This field contains the common name for the analyte. Note: If the common name appears as the NAME IN REGULATION (as occurs in some cases), the technical name may appear as the COMMON NAME.

TECHNIQUE -- Analytical technique utilized, as derived from data provided by EPA's Athens laboratory and other sources. In those instances where the analytical technique is known, it has been encoded. The following analysis types are encoded:

CGCEC - Combination method using gas chromatography with electron capture detector.
CGCFPD - Combination method using gas chromatography with flame photometric detector.
CGCHSD - Combination method using gas chromatography with a halogen specific detector
CVAA - Cold vapor Atomic Absorption Spectrometry

HRGCMS - High Resolution GCMS Analysis for dibenzo-p-dioxins and dibenzofurans

FURNAA - Furnace Atomic Absorption Spectrometry

GCMS - Analysis by gas chromatography/mass spectrometry

ICP - Analysis by inductively coupled plasma spectrometry

WET - Analysis by a classical wet method such as a titrametric, colorimetric or gravimetric method

METHOD -- The EPA Method number, where it is known. The following acronyms are used:

ASRCH - This analyte is determined by searching the acid (or combined acid and base/neutral) fraction.

BSRCH - This analyte is determined by searching the base/neutral (or combined acid and base/neutral) fraction.

VSRCH - This analyte is determined by searching the volatile fraction.

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: VOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
107131	ACRYLONITRILE	GCMS	1624
71432	BENZENE	GCMS	1624
75274	BROMODICHLOROMETHANE	GCMS	1624
74839	BROMOMETHANE	GCMS	1624
75150	CARBON DISULFIDE	GCMS	VSRCH
107142	CHLOROACETONITRILE	GCMS	VSRCH
108907	CHLOROBENZENE	GCMS	1624
75003	CHLOROETHANE	GCMS	1624
67663	CHLOROFORM	GCMS	1624
74873	CHLOROMETHANE	GCMS	1624
10061015	CIS-1,3-DICHLOROPROPENE	GCMS	VSRCH
4170303	CROTONALDEHYDE	GCMS	VSRCH
124481	DIBROMOCHLOROMETHANE	GCMS	1624
74953	DIBROMOMETHANE	GCMS	VSRCH
60297	DIETHYL ETHER	GCMS	1624
107120	ETHYL CYANIDE	GCMS	VSRCH
97632	ETHYL METHACRYLATE	GCMS	VSRCH
100414	ETHYLBENZENE	GCMS	1624
74884	IODOMETHANE	GCMS	VSRCH
78831	ISOBUTYL ALCOHOL	GCMS	VSRCH
108383	M-XYLENE	GCMS	VSRCH
80626	METHYL METHACRYLATE	GCMS	VSRCH
75092	METHYLENE CHLORIDE	GCMS	1624
1-952	O+P XYLENE	GCMS	VSRCH
127184	TETRACHLOROETHENE	GCMS	1624
56235	TETRACHLOROMETHANE	GCMS	1624
108883	TOLUENE	GCMS	1624
156605	TRANS-1,2-DICHLOROETHENE	GCMS	1624
10061026	TRANS-1,3-DICHLOROPROPENE	GCMS	1624
110576	TRANS-1,4-DICHLORO-2-BUTENE	GCMS	VSRCH
75252	TRIBROMOMETHANE	GCMS	1624
79016	TRICHLOROETHENE	GCMS	1624
75694	TRICHLOROFLUOROMETHANE	GCMS	VSRCH
108054	VINYL ACETATE	GCMS	VSRCH

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: VOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
75014	VINYL CHLORIDE	GCMS	1624
75343	1,1-DICHLOROETHANE	GCMS	1624
75354	1,1-DICHLOROETHENE	GCMS	1624
71556	1,1,1-TRICHLOROETHANE	GCMS	1624
630206	1,1,1,2-TETRACHLOROETHANE	GCMS	VSRCH
79005	1,1,2-TRICHLOROETHANE	GCMS	1624
79345	1,1,2,2-TETRACHLOROETHANE	GCMS	1624
106934	1,2-DIBROMOETHANE	GCMS	VSRCH
107062	1,2-DICHLOROETHANE	GCMS	1624
78875	1,2-DICHLOROPROPANE	GCMS	1624
96184	1,2,3-TRICHLOROPROPANE	GCMS	VSRCH
126998	1,3-BUTADIENE, 2-CHLORO	GCMS	VSRCH
142289	1,3-DICHLOROPROPANE	GCMS	VSRCH
123911	1,4-DIOXANE	GCMS	1624
78933	2-BUTANONE	GCMS	1624
110758	2-CHLOROETHYLVINYL ETHER	GCMS	1624
591786	2-HEXANONE	GCMS	VSRCH
67641	2-PROPANONE	GCMS	1624
107186	2-PROPEN-1-OL	GCMS	VSRCH
107028	2-PROPENAL	GCMS	1624
126987	2-PROPENENITRILE, 2-METHYL-	GCMS	VSRCH
107051	3-CHLOROPROPENE	GCMS	VSRCH
108101	4-METHYL-2-PENTANONE	GCMS	VSRCH

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: SEMIVOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
83329	ACENAPHTHENE	GCMS	1625
208968	ACENAPHTHYLENE	GCMS	1625
98862	ACETOPHENONE	GCMS	BSRCH
98555	ALPHA-TERPINEOL	GCMS	1625
62533	ANILINE	GCMS	BSRCH
137177	ANILINE, 2,4,5-TRIMETHYL-	GCMS	BSRCH
120127	ANTHRACENE	GCMS	1625
140578	ARAMITE	GCMS	BSRCH
82053	BENZANTHRONE	GCMS	BSRCH
108985	BENZENETHIOL	GCMS	BSRCH
92875	BENZIDINE	GCMS	1625
56553	BENZO(A)ANTHRACENE	GCMS	1625
50328	BENZO(A)PYRENE	GCMS	1625
205992	BENZO(B)FLUORANTHENE	GCMS	1625
191242	BENZO(GHI)PERYLENE	GCMS	1625
207089	BENZO(K)FLUORANTHENE	GCMS	1625
65850	BENZOIC ACID	GCMS	ASRCH
1689845	BENZONITRILE, 3,5-DIBROMO-4-HYDROXY-	GCMS	ASRCH
100516	BENZYL ALCOHOL	GCMS	BSRCH
91598	BETA-NAPHTHYLAMINE	GCMS	1625
92524	BIPHENYL	GCMS	1625
92933	BIPHENYL, 4-NITRO	GCMS	BSRCH
111911	BIS(2-CHLOROETHOXY)METHANE	GCMS	1625
111444	BIS(2-CHLOROETHYL) ETHER	GCMS	1625
108601	BIS(2-CHLOROISOPROPYL) ETHER	GCMS	1625
117817	BIS(2-ETHYLHEXYL) PHTHALATE	GCMS	1625
85687	BUTYL BENZYL PHTHALATE	GCMS	1625
86748	CARBAZOLE	GCMS	1625
218019	CHRYSENE	GCMS	1625
7700176	CIODRIN	GCMS	BSRCH
7700176	CROTOXYPHOS	GCMS	BSRCH
84742	DI-N-BUTYL PHTHALATE	GCMS	1625
117840	DI-N-OCTYL PHTHALATE	GCMS	1625
621647	DI-N-PROPYLNITROSAMINE	GCMS	1625
53703	DIBENZO(A,H)ANTHRACENE	GCMS	1625
132649	DIBENZOFURAN	GCMS	1625
132650	DIBENZOTHIOPHENE	GCMS	1625
84662	DIETHYL PHTHALATE	GCMS	1625
131113	DIMETHYL PHTHALATE	GCMS	1625
67710	DIMETHYL SULFONE	GCMS	BSRCH

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: SEMIVOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
101848	DIPHENYL ETHER	GCMS	1625
122394	DIPHENYLAMINE	GCMS	1625
882337	DIPHENYLDISULFIDE	GCMS	BSRCH
76017	ETHANE, PENTACHLORO-	GCMS	BSRCH
62500	ETHYL METHANESULFONATE	GCMS	BSRCH
96457	ETHYLENETHIOUREA	GCMS	BSRCH
206440	FLUORANTHENE	GCMS	1625
86737	FLUORENE	GCMS	1625
118741	HEXACHLOROBENZENE	GCMS	1625
87683	HEXACHLOROBUTADIENE	GCMS	1625
77474	HEXACHLOROCYCLOPENTADIENE	GCMS	1625
67721	HEXACHLOROETHANE	GCMS	1625
1888717	HEXACHLOROPROPENE	GCMS	BSRCH
142621	HEXANOIC ACID	GCMS	ASRCH
193395	INDENO(1,2,3-CD)PYRENE	GCMS	1625
78591	ISOPHORONE	GCMS	1625
120581	ISOSAFROLE	GCMS	BSRCH
475207	LONGIFOLENE	GCMS	BSRCH
569642	MALACHITE GREEN	GCMS	BSRCH
72333	MESTRANOL	GCMS	BSRCH
91805	METHAPYRILENE	GCMS	BSRCH
66273	METHYL METHANESULFONATE	GCMS	BSRCH
124185	N-DECANE	GCMS	1625
629970	N-DOCOSANE	GCMS	1625
112403	N-DODECANE	GCMS	1625
112958	N-EICOSANE	GCMS	1625
630013	N-HEXACOSANE	GCMS	1625
544763	N-HEXADECANE	GCMS	1625
924163	N-NITROSODI-N-BUTYLAMINE	GCMS	BSRCH
55185	N-NITROSODIETHYLAMINE	GCMS	BSRCH
62759	N-NITROSODIMETHYLAMINE	GCMS	1625
86306	N-NITROSODIPHENYLAMINE	GCMS	1625
10595956	N-NITROSOMETHYLETHYLAMINE	GCMS	BSRCH
614006	N-NITROSOMETHYLPHENYLAMINE	GCMS	BSRCH
59892	N-NITROSOMORPHOLINE	GCMS	BSRCH
100754	N-NITROSOPIPERIDINE	GCMS	BSRCH
630024	N-OCTACOSANE	GCMS	1625
593453	N-OCTADECANE	GCMS	1625
646311	N-TETRACOSANE	GCMS	1625
629594	N-TETRADECANE	GCMS	1625

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: SEMIVOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
638686	N-TRIACONTANE	GCMS	1625
68122	N,N-DIMETHYLFORMAMIDE	GCMS	BSRCH
91203	NAPHTHALENE	GCMS	1625
98953	NITROBENZENE	GCMS	1625
90040	O-ANISIDINE	GCMS	BSRCH
95487	O-CRESOL	GCMS	BSRCH
95534	O-TOLUIDINE	GCMS	BSRCH
95794	O-TOLUIDINE, 5-CHLORO-	GCMS	BSRCH
106478	P-CHLOROANILINE	GCMS	BSRCH
106445	P-CRESOL	GCMS	ASRCH
99876	P-CYMENE	GCMS	1625
60117	P-DIMETHYLAMINOAZOBENZENE	GCMS	BSRCH
100016	P-NITROANILINE	GCMS	BSRCH
608935	PENTACHLOROBENZENE	GCMS	BSRCH
87865	PENTACHLOROPHENOL	GCMS	1625
700129	PENTAMETHYLBENZENE	GCMS	BSRCH
198550	PERYLENE	GCMS	BSRCH
62442	PHENACETIN	GCMS	BSRCH
85018	PHENANTHRENE	GCMS	1625
108952	PHENOL	GCMS	1625
534521	PHENOL, 2-METHYL-4,6-DINITRO-	GCMS	1625
92842	PHENOTHIAZINE	GCMS	BSRCH
23950585	PRONAMIDE	GCMS	BSRCH
129000	PYRENE	GCMS	1625
110861	PYRIDINE	GCMS	BSRCH
108463	RESORCINOL	GCMS	BSRCH
94597	SAFROLE	GCMS	BSRCH
7683649	SQUALENE	GCMS	BSRCH
100425	STYRENE	GCMS	1625
95158	THIANAPHTHENE	GCMS	BSRCH
62555	THIOACETAMIDE	GCMS	BSRCH
492228	THIOXANTHE-9-ONE	GCMS	BSRCH
95807	TOLUENE, 2,4-DIAMINO-	GCMS	BSRCH
217594	TRIPHENYLENE	GCMS	BSRCH
20324338	TRIPROPYLENEGLYCOL METHYL ETHER	GCMS	BSRCH
694804	1-BROMO-2-CHLOROBENZENE	GCMS	BSRCH
108372	1-BROMO-3-CHLOROBENZENE	GCMS	BSRCH
121733	1-CHLORO-3-NITROBENZENE	GCMS	BSRCH
1730376	1-METHYLFLUORENE	GCMS	BSRCH
832699	1-METHYLPHENANTHRENE	GCMS	BSRCH

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: SEMIVOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
134327	1-NAPHTHYLAMINE	GCMS	BSRCH
605027	1-PHENYLNAPHTHALENE	GCMS	BSRCH
96128	1,2-DIBROMO-3-CHLOROPROPANE	GCMS	BSRCH
95501	1,2-DICHLOROBENZENE	GCMS	1625
122667	1,2-DIPHENYLHYDRAZINE	GCMS	1625
87616	1,2,3-TRICHLOROBENZENE	GCMS	1625
634366	1,2,3-TRIMETHOXYBENZENE	GCMS	BSRCH
120821	1,2,4-TRICHLOROBENZENE	GCMS	1625
95943	1,2,4,5-TETRACHLOROBENZENE	GCMS	BSRCH
1464535	1,2:3,4-DIEPOXYBUTANE	GCMS	BSRCH
96231	1,3-DICHLORO-2-PROPANOL	GCMS	BSRCH
541731	1,3-DICHLOROBENZENE	GCMS	1625
291214	1,3,5-TRITHIANE	GCMS	BSRCH
106467	1,4-DICHLOROBENZENE	GCMS	1625
100254	1,4-DINITROBENZENE	GCMS	BSRCH
130154	1,4-NAPHTHOQUINONE	GCMS	BSRCH
2243621	1,5-NAPHTHALENEDIAMINE	GCMS	BSRCH
615225	2-(METHYLTHIO)BENZOTHIAZOLE	GCMS	BSRCH
91587	2-CHLORONAPHTHALENE	GCMS	1625
95578	2-CHLOROPHENOL	GCMS	1625
2027170	2-ISOPROPYLNAPHTHALENE	GCMS	BSRCH
120752	2-METHYLBENZOTHIOAZOLE	GCMS	BSRCH
91576	2-METHYLNAPHTHALENE	GCMS	BSRCH
88744	2-NITROANILINE	GCMS	BSRCH
88755	2-NITROPHENOL	GCMS	1625
612942	2-PHENYLNAPHTHALENE	GCMS	BSRCH
109068	2-PICOLINE	GCMS	1625
243174	2,3-BENZOFLUORENE	GCMS	BSRCH
608275	2,3-DICHLOROANILINE	GCMS	BSRCH
3209221	2,3-DICHLORONITROBENZENE	GCMS	BSRCH
58902	2,3,4,6-TETRACHLOROPHENOL	GCMS	ASRCH
933755	2,3,6-TRICHLOROPHENOL	GCMS	1625
120832	2,4-DICHLOROPHENOL	GCMS	1625
105679	2,4-DIMETHYLPHENOL	GCMS	1625
51285	2,4-DINITROPHENOL	GCMS	1625
121142	2,4-DINITROTOLUENE	GCMS	1625
95954	2,4,5-TRICHLOROPHENOL	GCMS	1625
88062	2,4,6-TRICHLOROPHENOL	GCMS	1625
719222	2,6-DI-TERT-BUTYL-P-BENZOQUINONE	GCMS	BSRCH
99309	2,6-DICHLORO-4-NITROANILINE	GCMS	BSRCH

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: SEMIVOLATILE ORGANICS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
87650	2,6-DICHLOROPHENOL	GCMS	ASRCH
606202	2,6-DINITROTOLUENE	GCMS	1625
56495	3-METHYLCHOLANTHRENE	GCMS	BSRCH
99092	3-NITROANILINE	GCMS	BSRCH
91941	3,3'-DICHLOROBENZIDINE	GCMS	1625
119904	3,3'-DIMETHOXYBENZIDINE	GCMS	BSRCH
1576676	3,6-DIMETHYLPHENANTHRENE	GCMS	BSRCH
92671	4-AMINOBIPHENYL	GCMS	BSRCH
101553	4-BROMOPHENYL PHENYL ETHER	GCMS	1625
89634	4-CHLORO-2-NITROANILINE	GCMS	BSRCH
59507	4-CHLORO-3-METHYLPHENOL	GCMS	1625
7005723	4-CHLOROPHENYLPHENYL ETHER	GCMS	1625
100027	4-NITROPHENOL	GCMS	1625
101144	4,4'-METHYLENEBIS(2-CHLOROANILINE)	GCMS	BSRCH
203645	4,5-METHYLENE PHENANTHRENE	GCMS	BSRCH
99558	5-NITRO-O-TOLUIDINE	GCMS	BSRCH
57976	7,12-DIMETHYLBENZ(A)ANTHRACENE	GCMS	BSRCH

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: PESTICIDES/HERBICIDES

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
94757	ACETIC ACID (2,4-DICHLOROPHENOXY)	CGCEC	1618
309002	ALDRIN	CGCHSD	1618
319846	ALPHA-BHC	CGCHSD	1618
2642719	AZINPHOS ETHYL	CGCFPD	1618
86500	AZINPHOS METHYL	CGCFPD	1618
319857	BETA-BHC	CGCHSD	1618
2425061	CAPTAFOL	CGCHSD	1618
133062	CAPTAN	CGCHSD	1618
786196	CARBOPHENOTHION (TRITHION)	CGCHSD	1618
57749	CHLORDANE	CGCHSD	1618
510156	CHLOROBENZILATE	CGCHSD	1618
470906	CHLOROFENVINPHOS	CGCFPD	1618
2921882	CHLORPYRIFOS	CGCFPD	1618
56724	COUMAPHOS	CGCFPD	1618
7700176	CROTOXYPHOS	CGCFPD	1618
319868	DELTA-BHC	CGCHSD	1618
8065483	DEMETON	CGCFPD	1618
2303164	DIALLATE	CGCHSD	1618
333415	DIAZINON	CGCFPD	1618
62737	DICHLORVOS	CGCFPD	1618
141662	DICROTOPHOS (BIDRIN)	CGCFPD	1618
60571	DIELDRIN	CGCHSD	1618
60515	DIMETHOATE	CGCFPD	1618
78342	DIOXATHION	CGCFPD	1618
298044	DISULFOTON	CGCFPD	1618
1031078	ENDOSULFAN SULFATE	CGCHSD	1618
959988	ENDOSULFAN-I	CGCHSD	1618
33213659	ENDOSULFAN-II	CGCHSD	1618
72208	ENDRIN	CGCHSD	1618
7421934	ENDRIN ALDEHYDE	CGCHSD	1618
53494705	ENDRIN KETONE	CGCHSD	1618
563122	ETHION	CGCFPD	1618
52857	FAMPHUR	CGCFPD	1618
115902	FENSULFOTHION	CGCFPD	1618
55389	FENTHION	CGCFPD	1618
76448	HEPTACHLOR	CGCHSD	1618
1024573	HEPTACHLOR EPOXIDE	CGCHSD	1618
465736	ISODRIN	CGCHSD	1618
21609905	LEPTOPHOS	CGCFPD	1618
58899	LINDANE (GAMMA-BHC)	CGCHSD	1618

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: PESTICIDES/HERBICIDES

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
121755	MALATHION	CGCFPD	1618
72435	METHOXYCHLOR	CGCHSD	1618
298000	METHYL PARATHION	CGCFPD	1618
7786347	MEVINPHOS (PHOSDRIN)	CGCFPD	1618
2385855	MIREX	CGCHSD	1618
6923224	MONOCROTOPHOS	CGCFPD	1618
300765	NALED (DIBROM)	CGCFPD	1618
1836755	NITROFEN (TOK)	CGCHSD	1618
56382	PARATHION	CGCFPD	1618
12674112	PCB-1016	CGCHSD	1618
11104282	PCB-1221	CGCHSD	1618
11141165	PCB-1232	CGCHSD	1618
53469219	PCB-1242	CGCHSD	1618
12672296	PCB-1248	CGCHSD	1618
11097691	PCB-1254	CGCHSD	1618
11096825	PCB-1260	CGCHSD	1618
82688	PENTACHLORONITROBENZENE	CGCHSD	1618
298022	PHORATE	CGCFPD	1618
732116	PHOSMET	CGCFPD	1618
13171216	PHOSPHAMIDON	CGCFPD	1618
78308	PHOSPHORIC ACID, TRI-O-TOLYL ESTER	CGCFPD	1618
512561	PHOSPHORIC ACID, TRIMETHYL ESTER	CGCFPD	1618
680319	PHOSPHORIC TRIAMIDE, HEXAMETHYL-	CGCFPD	1618
2104645	SANTOX (EPN)	CGCFPD	1618
13071799	TERBUFOS	CGCFPD	1618
961115	TETRACHLORVINPHOS	CGCFPD	1618
3689245	TETRAETHYLDITHIOPYROPHOSPHATE	CGCFPD	1618
107493	TETRAETHYLPYROPHOSPHATE	CGCFPD	1618
8001352	TOXAPHENE	CGCHSD	1618
52686	TRICHLOROFON	CGCFPD	1618
1582098	TRIFLURALIN (TREFLAN)	CGCHSD	1618
117806	1,4-NAPHTHOQUINONE, 2,3-DICHLORO-	CGCHSD	1618
88857	2-SEC-BUTYL-4,6-DINITROPHENOL	CGCHSD	1618
93765	2,4,5-TRICHLOROPHENOXYACETIC ACID	CGCEC	1618
93721	2,4,5-TRICHLOROPHENOXYPROPIONIC ACID	CGCEC	1618
72548	4,4'-DDD	CGCHSD	1618
72559	4,4'-DDE	CGCHSD	1618
50293	4,4'-DDT	CGCHSD	1618

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: DIOXINS/FURANS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
3268879	OCTACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
39001020	OCTACHLORODIBENZOFURAN	HRGCMS	1613
37871004	TOTAL HEPTACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
38998753	TOTAL HEPTACHLORODIBENZOFURANS	HRGCMS	1613
344654608	TOTAL HEXACHLORODIBENZO-P-DIOXINS	HRGCMS	1613
1_201	TOTAL HEXACHLORODIBENZOFURANS	HRGCMS	1613
36088229	TOTAL PENTACHLORODIBENZO-P-DIOXINS	HRGCMS	1613
30402154	TOTAL PENTACHLORODIBENZOFURANS	HRGCMS	1613
41903575	TOTAL TETRACHLORODIBENZO-P-DIOXINS	HRGCMS	1613
55722275	TOTAL TETRACHLORODIBENZOFURANS	HRGCMS	1613
35822469	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
67562394	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	HRGCMS	1613
39227286	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
70648269	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	HRGCMS	1613
55673897	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	HRGCMS	1613
57653857	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
57117449	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	HRGCMS	1613
40321764	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
57117416	1,2,3,7,8-PENTACHLORODIBENZOFURAN	HRGCMS	1613
19408743	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
72918219	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	HRGCMS	1613
60851345	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	HRGCMS	1613
57117314	2,3,4,7,8-PENTACHLORODIBENZOFURAN	HRGCMS	1613
1746016	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	HRGCMS	1613
51207319	2,3,7,8-TETRACHLORODIBENZOFURAN	HRGCMS	1613

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: METALS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
7429905	ALUMINUM	ICP	1620
7440360	ANTIMONY	FURNAA	1620
7440382	ARSENIC	FURNAA	1620
7440393	BARIUM	ICP	1620
7440417	BERYLLIUM	ICP	1620
7440699	BISMUTH	ICP	1620
7440428	BORON	ICP	1620
7440439	CADMIUM	ICP	1620
7440702	CALCIUM	ICP	1620
7440451	CERIUM	ICP	1620
7440473	CHROMIUM	ICP	1620
7440484	COBALT	ICP	1620
7440508	COPPER	ICP	1620
7429916	DYSPROSIUM	ICP	1620
7440520	ERBIUM	ICP	1620
7440531	EUROPIUM	ICP	1620
7440542	GADOLINIUM	ICP	1620
7440553	GALLIUM	ICP	1620
7440564	GERMANIUM	ICP	1620
7440575	GOLD	ICP	1620
7440586	HAFNIUM	ICP	1620
7440600	HOLMIUM	ICP	1620
7440746	INDIUM	ICP	1620
7553562	IODINE	ICP	1620
7439885	IRIDIUM	ICP	1620
7439896	IRON	ICP	1620
7439910	LANTHANUM	ICP	1620
7439921	LEAD	ICP	1620
7439932	LITHIUM	ICP	1620
7439943	LUTETIUM	ICP	1620
7439954	MAGNESIUM	ICP	1620
7439965	MANGANESE	ICP	1620
7439976	MERCURY	CVAA	1620
7439987	MOLYBDENUM	ICP	1620
7440008	NEODYMIUM	ICP	1620
7440020	NICKEL	ICP	1620
7440031	NIOBIUM	ICP	1620
7440042	OSMIUM	ICP	1620
7440053	PALLADIUM	ICP	1620
7723140	PHOSPHORUS	ICP	1620

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: METALS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
7440064	PLATINUM	ICP	1620
7440097	POTASSIUM	ICP	1620
7440100	PRASEODYMIUM	ICP	1620
7440155	RHENIUM	ICP	1620
7440166	RHODIUM	ICP	1620
7440188	RUTHENIUM	ICP	1620
7440199	SAMARIUM	ICP	1620
7440202	SCANDIUM	ICP	1620
7782492	SELENIUM	FURNAA	1620
7440213	SILICON	ICP	1620
7440224	SILVER	ICP	1620
7440235	SODIUM	ICP	1620
7440246	STRONTIUM	ICP	1620
7704349	SULFUR	ICP	1620
7440257	TANTALUM	ICP	1620
13494809	TELLURIUM	ICP	1620
7440279	TERBIUM	ICP	1620
7440280	THALLIUM	FURNAA	1620
7440291	THORIUM	ICP	1620
7440304	THULIUM	ICP	1620
7440315	TIN	ICP	1620
7440326	TITANIUM	ICP	1620
7440337	TUNGSTEN	ICP	1620
7440611	URANIUM	ICP	1620
7440622	VANADIUM	ICP	1620
7440644	YTTERBIUM	ICP	1620
7440655	YTTRIUM	ICP	1620
7440666	ZINC	ICP	1620
7440677	ZIRCONIUM	ICP	1620

LIST OF ANALYTES FOR THE NATIONAL SEWAGE SLUDGE SURVEY

FRACTION: CLASSICALS

CAS NUMBER	COMMON NAME	TECHNIQUE	METHOD
57125	CYANIDES (SOLUBLE SALTS AND COMPLEXES)	WET	335.2
16984488	FLUORIDE	WET	340.2
2_011	NITRATE	WET	353.2
14797650	NITRITE	WET	353.2
7723140	PHOSPHORUS	WET	365.2
1-008	RESIDUE, TOTAL	WET	160.3
1-021	TOTAL KJELDAHL NITROGEN	WET	351.2

APPENDIX D

DEFINITIONS OF SEWAGE SLUDGE PROCESSING TERMS

The information contained in this appendix was prepared by ERC Environmental and Energy Services Company under EPA Contract No. 68-03-3410. The associated logical variable names from the SAM_INFO Database member are shown in parentheses following terms.

PRIMARY SLUDGE (PRI_SLG) -- sewage sludge produced during primary treatment, this sludge normally consists of those materials which are easily settleable or floatable.

SECONDARY SLUDGE (SEC_SLG) -- sewage sludge produced during secondary treatment processes such as activated sludge or trickling filters.

CHEMICAL SLUDGE (CHEM_SLG) -- sewage sludge produced by chemical (tertiary) treatment processes, these sludges are produced in small quantities and are normally combined with other sludges before further processing.

SLUDGE MIXTURE (SLG_MIX) -- any combination of the above sludge types.

AEROBIC DIGESTION (AERO_DIG) -- the extended processing of sewage sludge under aerobic conditions in an effort to oxidize sludge organics to stable end products, reduce sludge mass and volume, and to condition sludge for further solids handling.

ANAEROBIC DIGESTION (ANAE_DIG) -- the extended processing of sewage sludge under anaerobic conditions in an effort to decompose sludge organics to stabilized humus, to reduce sludge mass and volume, to obtain useful by-products such as methane gas, and to destroy or control disease causing agents.

GRAVITY THICKENER (GRAV_THK) - a process whereby sewage sludge solids are concentrated through natural settling.

DISSOLVED AIR FLOTATION (DAF) - a process in which very fine air bubbles are introduced into the liquid sludge, the air bubbles adhere to the small sludge particles, thus increasing the particles buoyancy. Sludge floats to the surface and is skimmed off for further processing.

CENTRIFUGE (CENTRI) - a dewatering process during which the sewage sludge solids are separated from the liquid by centrifugal force.

VACUUM FILTER (VAC_FILL) - a dewatering process in which sewage sludge solids are separated from the liquid portion by passing the liquid through a porous medium (filter cloth) on which the solids remain to form a cake. In this case, a vacuum applied to the opposite side of the filter medium is used to promote the separation.

FILTER PRESS (FIL_PRES) - (includes batch filter presses and continuous belt presses) a dewatering process in which sewage sludge solids are separated from the liquid portion by passing the liquid through a porous medium (filter cloth) on which the solids remain to form a cake. In this case, pressure is used to separate the water from the sludge. In a "filter press" the pressure is created by the action of pumps forcing the sludge across the filter medium. In a "continuous belt press" the pressure is created by belts and rollers coming together and squeezing the sludge.

DRYING BEDS (DRYG_BED) -- (includes sand drying beds, drying lagoons, cement drying pads, gravity beds and vacuum assisted drying beds) a simple drying process where the sewage sludge is discharged onto the bed and allowed to dry under natural conditions, the sludge is removed when the desired moisture content is achieved, this may take any where from a few days to a few months.

CHLORINE OXIDATION (CL2_OX) -- the process where chlorine is added to sewage sludge to further oxidize and stabilize organic material.

HEAT TREATMENT(HEAT_TRT) -- a chemical oxidation process which uses air in aqueous solution to oxidize organic matter at high temperature and pressure.

LIME STABILIZATION (LIME_STA) -- a chemical process in which large amounts of lime are added to sewage sludge. The sludge pH is usually taken above 11.0 and kept there for a few hours. This process further stabilizes organic matter and destroys pathogens.

WET AIR OXIDATION (WET_OX) -- a chemical oxidation process in which additional oxygen (besides that found in ordinary air) is mixed with sewage sludge at high temperature and pressure to oxidize organic matter.

COMPOSTING (COMPOST) -- a technique for further stabilizing the organic matter and destroying pathogens in sewage sludge.

POLYMER (POLY-ADD) -- high molecular weight chemicals which react with the fine particles in sewage sludge and assist in bringing them together into larger and heavier masses for settling and dewatering.

APPENDIX E. SAMPLING WEIGHTS AND USE

National estimates produced from the National Sewage Sludge Survey data require the use of sampling weights since sampled POTWs were not selected from the sampling frame with the same probability. This section briefly describes the sampling plan for the analytical component of the survey, provides sampling weights, and illustrates the use of sampling weights in parameter estimation.

The 208 POTWs in the analytical component of the National Sewage Sludge Survey resulted from a stratified, random probability sample of 11,346 POTWs in the 1986 NEEDS Survey sampling frame. Since flow rate is a critical variable for the evaluation of technical sludge regulations, a criterion for designing the sampling plan was to allow separate analyses of each flow rate group. However, the distribution of POTWs across flow rate groups is highly skewed. A simple random sample from the sampling frame would not have allowed for the separate analyses unless an extremely large number of POTWs was sampled. Therefore, a stratified, random sampling plan was executed. In this plan, a statistically determined number of POTWs was randomly drawn from each of the four sampling frame flow rate strata. Section E.1 presents the sampling weight for each stratum. The use of these sampling weights to estimate stratum and population totals and means is illustrated in Section E.2.

E.1 SAMPLING WEIGHTS

Let N_i be the number of sample frame POTWs corresponding to the ith flow rate group, for i = 1,..,4. The N_is for the four sample frame strata are presented in Table E.1.1. The total number of POTWs is given by $N_.$, where

$$N_. = \sum_{i=1}^{4} N_{i.} \ .$$

Denote the sample size of the (ith) stratum by n_i . Then the total sample size for the survey is denoted as $n_.$. Table E.1.2 presents the n_is for the four strata.

The sampling weight for each of the 4 strata is listed on Table E.1.3. The sampling weight for the (ith) stratum is denoted as p_i , where

$$p_i = n_i/N_i \ .$$

TABLE E.1.1 SAMPLING FRAME FOR ANALYTICAL SURVEY (N_i)

FLOW RATE GROUP (MGD)	N_i
1: > 100	28
2: 10 - 100	324
3: 1 - 10	1927
4: 0 - 1	9067
TOTAL (N.)	11346

TABLE E.1.2 SAMPLE SIZE FOR ANALYTICAL SURVEY (n_i)

FLOW RATE GROUP (MGD)	n_i
1: > 100	20
2: 10 - 100	56
3: 1 - 10	65
4: 0 - 1	67
TOTAL (n.)	208

TABLE E.1.3 SAMPLING WEIGHTS FOR THE ANALYTICAL SURVEY STRATA (P_i)

FLOW RATE GROUP (MGD)	P_i
1: > 100	20/28
2: 10 - 100	56/324
3: 1 - 10	65/1927
4: 0 - 1	67/9067

The following section defines estimators for stratum and population totals and means derived from the analytical data.

E.2 ESTIMATION OF STRATUM AND POPULATION TOTALS AND MEANS

Let X_{ij} be the value of a characteristic for the j^{th} POTW from the ith flow rate group. The variable X may be either discrete or continuous. The stratum flow rate group for a POTW is designated by the first digit in the variable SURVEYID. The population total for variable X from the (i^{th}) survey stratum is estimated by:

$$T_i = \sum_{j=1}^{n_i} X_{ij} / p_i \ .$$

The estimated total for the variable X from the population is obtained by summing T_i across the four flow rate groups:

$$T_. = \sum_{i=1}^{4} T_i \ .$$

The mean value of the variable X for the i^{th} stratum is obtained by dividing the estimated stratum total (T_i) by the number of POTWs in the i^{th} stratum of the sample frame (N_i). That is, the mean for the i^{th} stratum is estimated as T_i/N_i . Likewise, the population mean for the variable X is estimated as $T_./N_.$.

Variance estimators and estimators for other quantities from stratified random samples are found in Sampling Techniques, third edition, by William G. Cochran (Wiley & Sons, 1977).